

**I02IF
I12IF
Tier 2**

Wheel Loader

Operator's Manual

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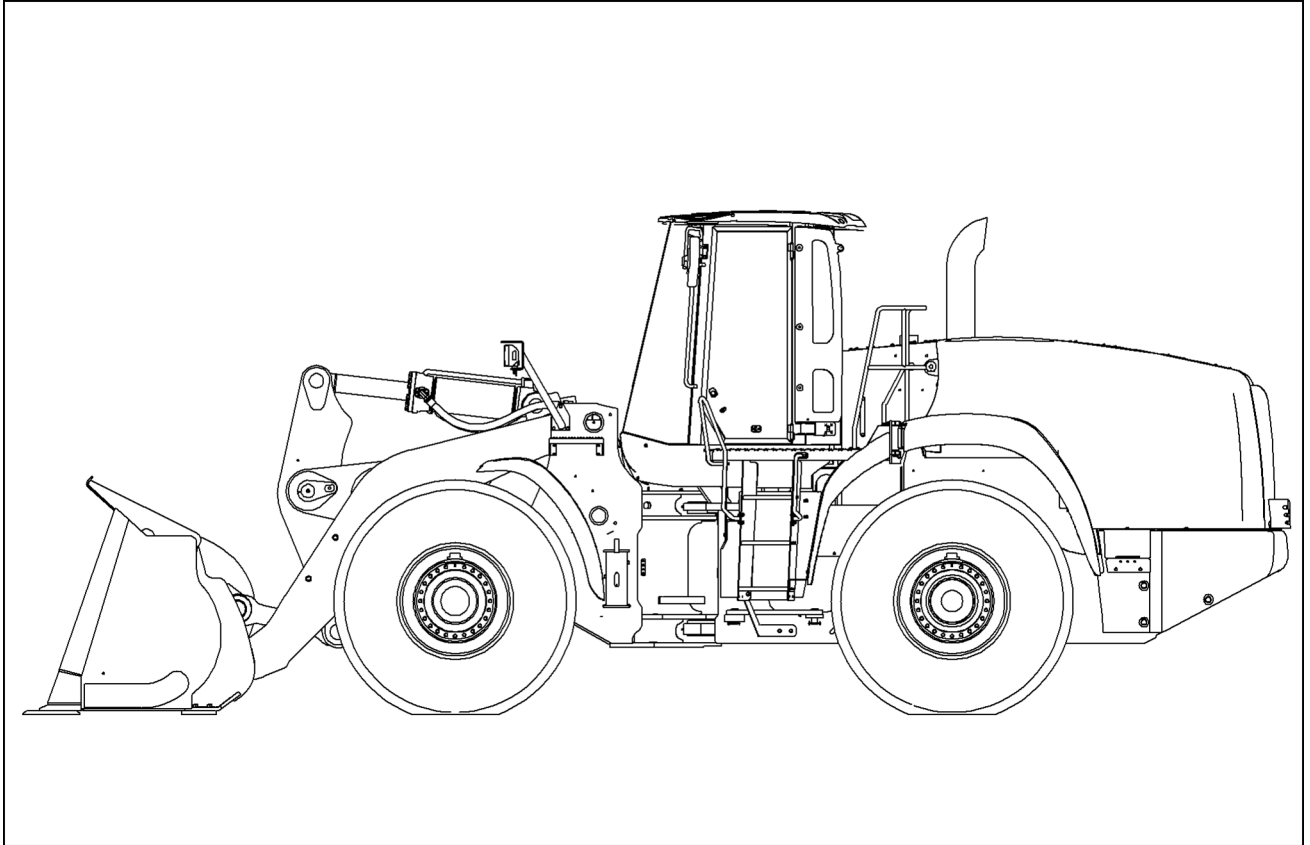
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1 - GENERAL INFORMATION

Note to the Owner [60619556]



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Read this manual before you start the engine or operate the machine. If you need more information, contact your authorized CASE dealer.

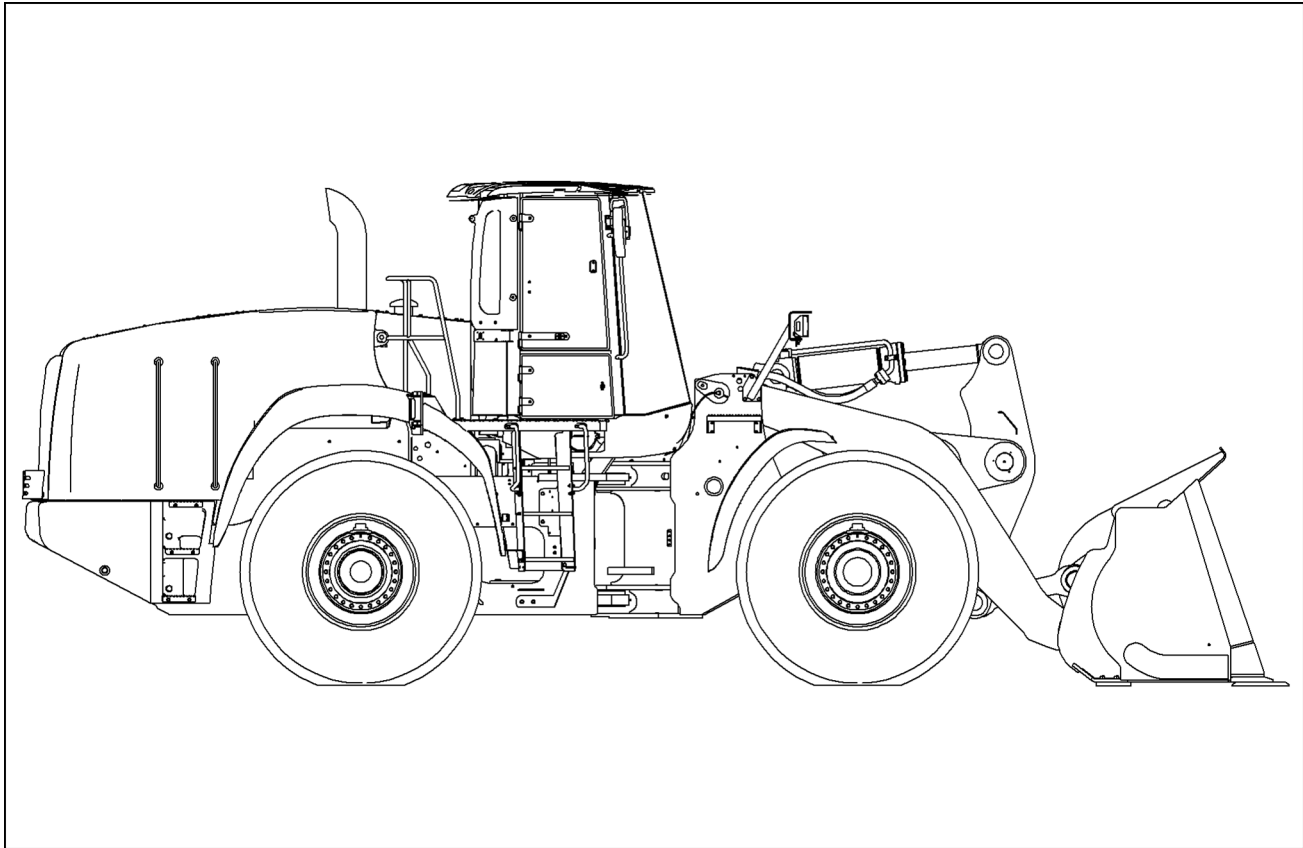
This manual contains important information about the safe operation, adjustment, and maintenance of your machine. Refer to the index at the back of this manual for locating specific items about your machine. The wheel loader conforms to current safety regulations.

Consult an authorized dealer or CNH America LLC on changes, additions, or modifications that can be required for this machine to comply with various country regulations and safety requirements. Unauthorized modifications will cause serious injury or death. Anyone making such unauthorized modifications is responsible for the consequences.

The information in this manual is provided on the basis of information that was available at the time the manual was written. Settings, procedures, part numbers, software and other items can change. These changes can affect the maintenance performed on the machine. Ensure that you have complete and current information from your dealer before you start any machine operation.

ATTENTION: The fuel system and engine on your machine are designed and built to government emissions standards. Tampering by dealers, customers, operators, and users is strictly prohibited by law. Failure to comply could result in government fines, rework charges, invalid warranty, legal action, and possible confiscation of the machine until rework to original condition is completed. Engine service and/or repairs must be done by a certified technician only!

1 - GENERAL INFORMATION



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DO NOT OPERATE or permit anyone to operate or service this machine until you or the other persons have read and understand the safety, operation and maintenance instructions in this manual. Use only trained operators who have demonstrated the ability to operate and service this machine correctly and safely.

This Wheel Loader, with standard equipment and attachments is intended to be used for digging and general earth moving purposes such as land leveling, truck loading, and material rehandling. This machine is not intended to be used for lifting other objects or transporting loads at high speeds.

DO NOT use this machine for any application or purpose other than those described in this manual, decals, or other product safety information provided with the machine. These materials define the machine's intended use.

If the loader is to be used in an application that involves special attachments or equipment, such as forestry, etc., consult an authorized dealer. Consult an authorized dealer on changes, additions or modifications that can be required for this machine to comply with various country regulations and safety requirements. Unauthorized modifications may cause serious injury or death. Anyone making such unauthorized modifications is responsible for the consequences.

Before permitting a new operator on this machine, make certain:

- That the operator has received the necessary training to operate the machine correctly and safely.
- That the operator has read and understands the instructions given in this manual.

All persons who will be operating this machine shall possess a valid local vehicle operating permit and/or other applicable local age work permits.

This Operators Manual is to be stored in the manual compartment equipped on this machine. Make sure this manual is complete and in good condition. Contact your dealer to obtain additional manuals or manuals in languages other than that of the country of use.

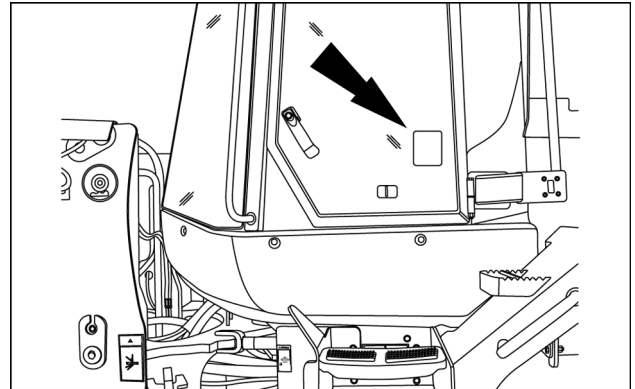
Your dealer is at your disposal for any further information. He will also provide any after-sales service you may require and genuine Case replacement parts, your guarantee of quality and match.

Noise level [60619753]

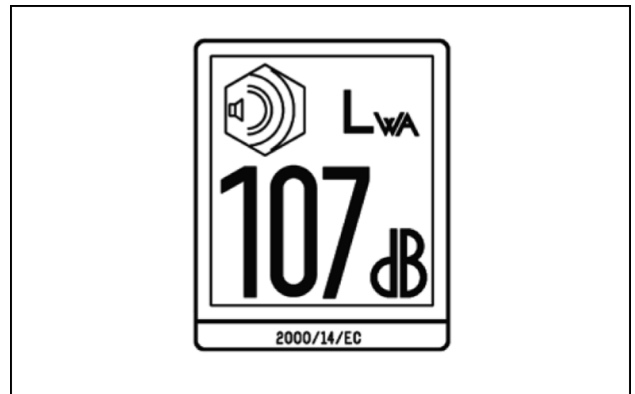
Sound power level

LWA = 107 dB (A)

Guaranteed sound power level (1) determined according to European Directive **2000/14/EC**



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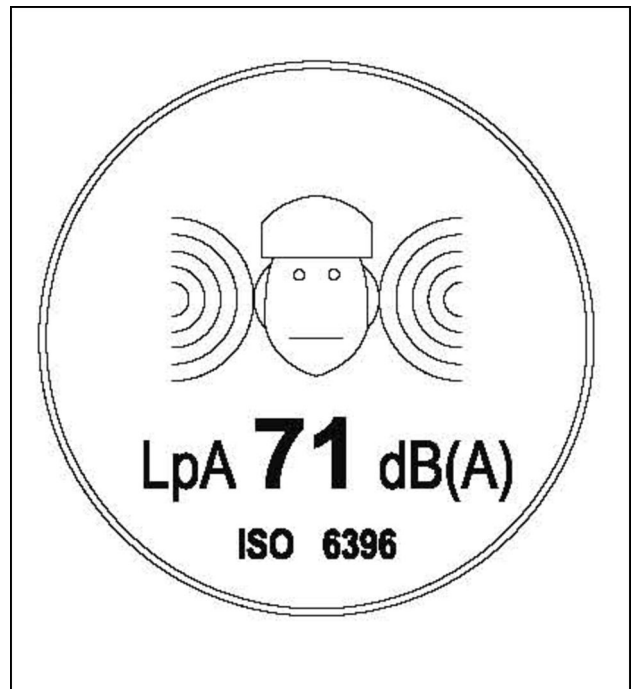


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Sound pressure level at operator's station

Lpa = 71 dB (A)

Equivalent continuous weighed sound pressure level (A) in correspondence with the operator station with cab door and windows closed and fan of the heater/conditioner operating in second speed, measured on identical machine, in compliance with standard **ISO 6396:2008**.



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Vehicle vibration levels [60619887]

The level of vibrations transmitted to the operator depends mainly upon the conditions of the ground on which operations take place, the mode of operation of the machine and its equipment. Thus, the exposure to vibrations can be considerably reduced when the following recommendations are complied with:

- use equipment compatible with the machine and the type of work to be done;
- adjust and lock the seat in the correct position; also inspect regularly the suspensions of the seat, performing the adjustments and repairs as required;
- perform regularly the current maintenance operations of the machine at the prescribed intervals;
- operate the equipment in a uniform manner, preventing, as far as possible, sharp movements or excessive loads;
- when travelling, avoid, as far as possible, particularly rough terrain or the impact against possible obstacles.
- This machine is equipped with an operator seat, which meets the criteria of **ISO 7096:2000** representing vertical vibration input under severe but typical operating conditions. This seat has been tested with the input spectral class EM 3-9, and its transmissibility factor is within the foreseen values. This ensures that the exposure of the operators body to vibrations comply with the protection requisites for the protection against vibrations when the machine operates as required by the operational scopes, in accordance with the prescriptions of this Manual. The effective value of the acceleration issued by the machine to which the arms of the operator are subjected does not exceed **2,5 m/s²**. The effective value of the acceleration issued by the machine to which the body is subjected does not exceed **0,5 m/s²**. These results have been achieved using an accelerometer during load and unload operations.

NOTE: Whole-body emission value is determined under particular operating and terrain conditions and is therefore not representative for the various conditions in accordance with the intended use of the machine. Consequently this single whole-body vibration emission value is not intended to determine the whole-body vibration exposure as required by European Directive **2002/44/EC**. For this purpose it's recommend to carry out real working condition measurement. If not feasible use of below reported information on **ISO/TR 25398:2006 (*)** is suggested.

Typical operating condition	Average			Standard deviation (s)		
	1,4*aw , eqx m/s ²	1,4*aw , eqy m/s ²	aw , eqz m/s ²	1,4*Sx m/s ²	1,4*Sy m/s ²	Sz m/s ²
Load and carry motion	0,84	0,81	0,52	0,23	0,20	0,14
Mining application	1,27	0,97	0,81	0,31	0,31	0,47
Transfer movement	0,76	0,91	0,49	0,35	0,35	0,17
V-shape motion	0,99	0,54	0,54	0,32	0,32	0,14

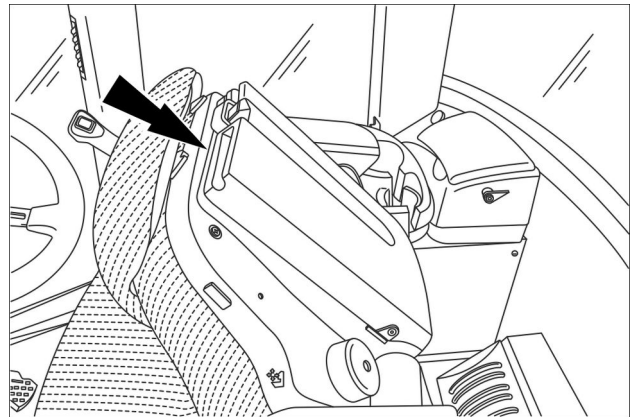
(*) **ISO/TR 25398:2006** Mechanical vibration - Guideline for the assessment of exposure to whole-body vibration of ride on operated earth moving machines - Using harmonized data measured by international institutes, organizations and manufacturers

Operator's manual storage [60619938]

To access the operator manual storage area located on the back of the operator's seat, release the latch on top of the seat and open the compartment.

READ THIS MANUAL COMPLETELY and make certain you understand the controls. All equipment has a limit. Make sure you understand the speed, brakes, steering, stability and load characteristics of this machine before you start to operate.

DO NOT remove this manual or the safety manual from the machine. See your dealer for additional manuals. Keep the Operator's Manual and the safety video in the storage compartment provided on the machine. The Operator's Manual and safety video must be available for use by all operators.



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When you see this symbol read your operator's manual.

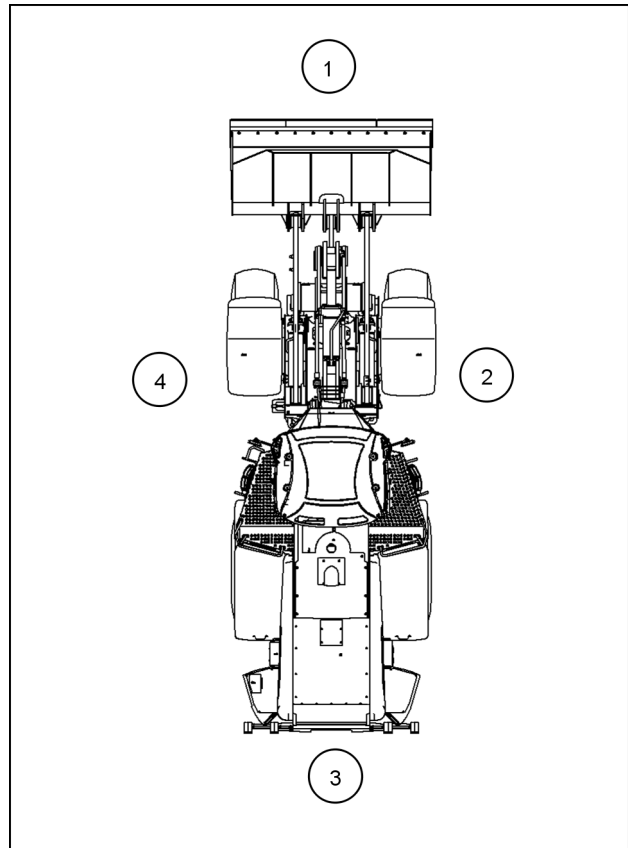


When you see this symbol refer to your repair manual.

Right, left, front and rear of the machine [60620016]

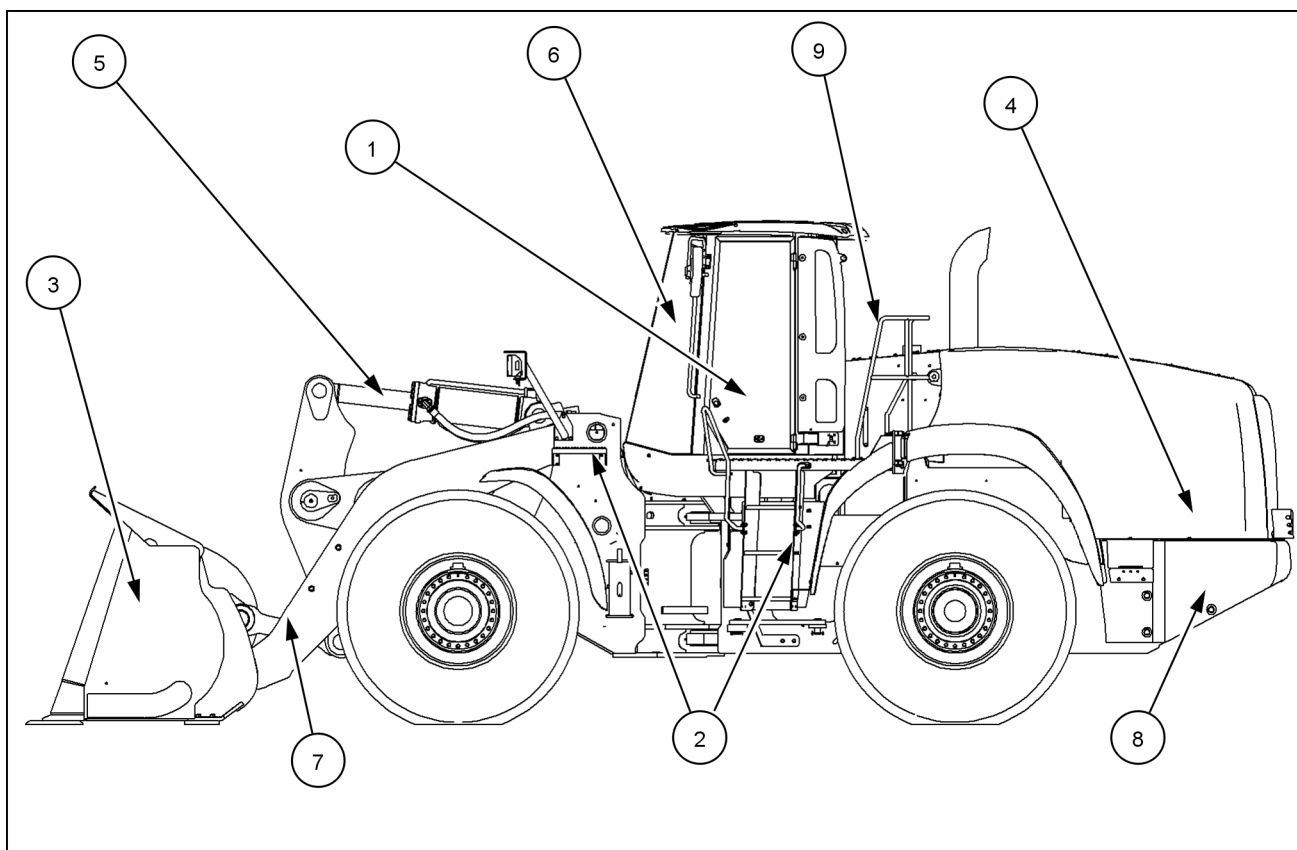
The terms Right-hand, Left-hand, Front, and Rear are used in this manual to indicate the sides as they are seen from the operator's seat.

1. Front
2. Right
3. Rear
4. Left



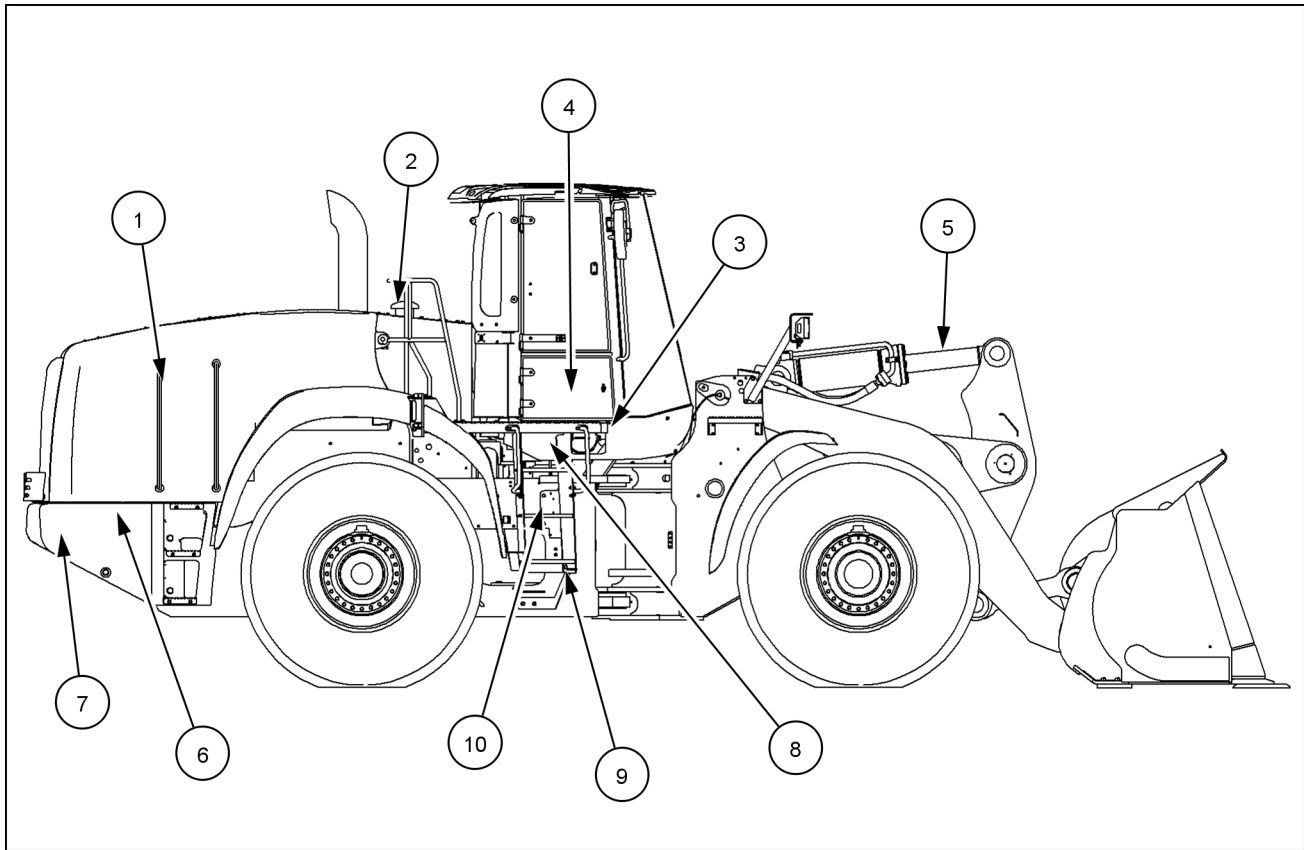
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Machine components [60620131]



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- | | |
|---|---------------------|
| 1. Cab door and hand holds | 6. ROPS cab |
| 2. Steps | 7. Loader lift arms |
| 3. Bucket | 8. Battery access |
| 4. Electric disconnect and optional battery jump post | 9. Hand rails |
| 5. Bucket cylinder | |



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- | | |
|--------------------------|---|
| 1. Hand rails | 6. Battery access |
| 2. Precleaner | 7. Bucket |
| 3. Cab air filter access | 8. Windshield washer reservoir |
| 4. Fuse access door | 9. Steps |
| 5. Bucket cylinder | 10. Transmission and axle cooler filters (if installed) |

Note to the owner [60621012]

This manual contains information concerning the adjustment and maintenance of your new equipment. You have purchased a dependable machine, but only by proper care and operation can you expect to receive the performance and long service built into this equipment. Please have all operators read this manual carefully and keep it available for ready reference.

Your authorized dealer will instruct you in the general operation of your new equipment. Your dealer's staff of factory-trained service technicians will be glad to answer any questions that may arise regarding the operation of your machine.

Your authorized dealer carries a complete line of genuine service parts. These parts are manufactured and carefully inspected to insure high quality and accurate fitting of any necessary replacement parts. Be prepared to give your dealer the model and product identification number of your new equipment when ordering parts. Locate these numbers now and record them below. Refer to the 'General Information' section of this manual for the location of the model and product identification numbers of your machine.

PLEASE RECORD THE FOLLOWING INFORMATION

Model

Date Purchased



This is the safety alert symbol. It is used with and without signal words to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible death or injury.

⚠ WARNING

Illustrations in this manual may show protective shielding open or removed to better illustrate a particular feature or adjustment.

Replace all shields before operating the machine.

Failure to comply could result in death or serious injury.

W0012A

IMPROVEMENTS

CNH America LLC is continually striving to improve its products. We reserve the right to make improvements or changes when it becomes practical and possible to do so, without incurring any obligation to make changes or additions to the equipment sold previously.

Identification numbers [60621113]

MODEL, SERIAL NUMBER, AND YEAR OF MANUFACTURE

When ordering parts, obtaining information or assistance, always supply your dealer with the type and serial number of your machine or accessories.

Write the following information in the spaces below: the type, serial number and year of manufacture of your machine, accessories and the serial numbers of the various hydraulic and mechanical components.

PRODUCT IDENTIFICATION PLATE

Depending on the manufacturing plant, the identification plate can be slightly different. The identification plate includes the main data of the machine.

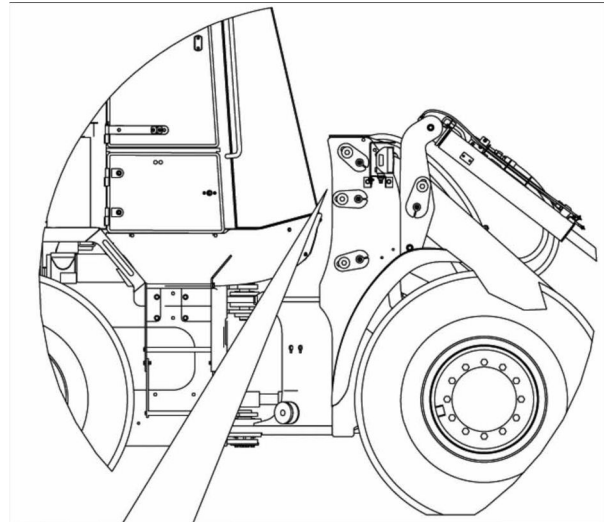
1. Indicates the type/model and designation of the machine.
2. The product identification number.
3. Indicates the machine serial number (if relevant)
4. Bar code

Record the data of your machine below.

Model

Serial Number

Manufacturing Year



Type / Model or Designation	1		4
Product Identification Number (PIN)	2		
Serial Number	3		

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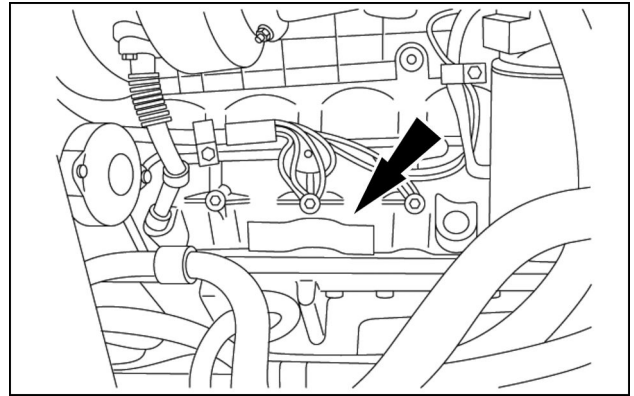
Type/Model	1		4
Product Identification Number (PIN)	2		

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ENGINE IDENTIFICATION

Make and Model

Serial Number

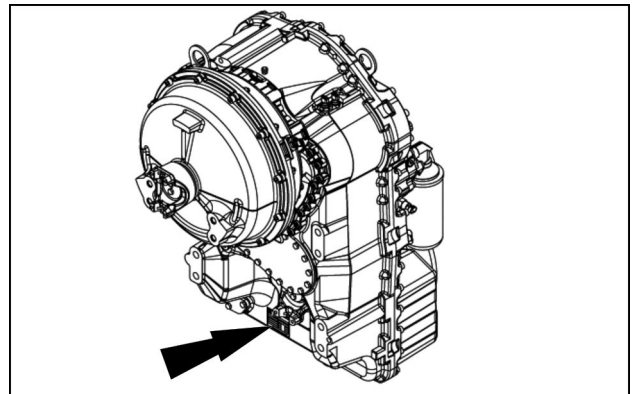


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TRANSMISSION IDENTIFICATION

Model.....

Serial Number



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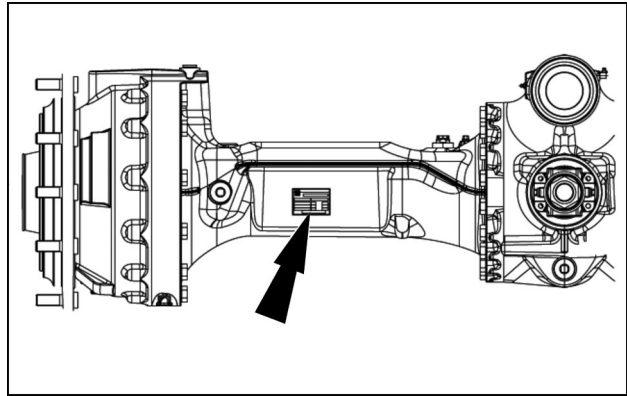
FRONT AND REAR AXLE IDENTIFICATION

Front axle Type

Front axle Serial Number

Rear axle Type

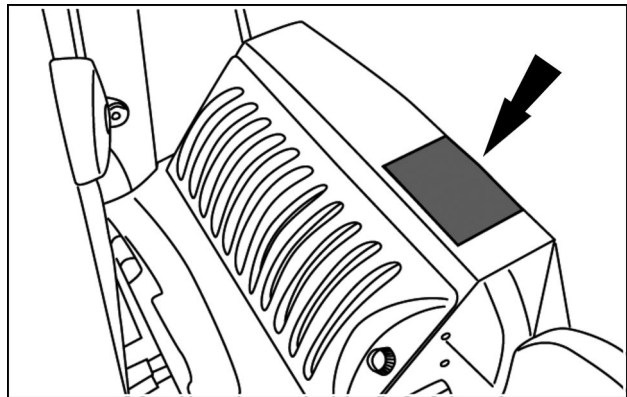
Rear axle Serial Number



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ROPS CAB

Serial Number



LEEN11T0025AA 6

Electro-Magnetic Compatibility (EMC) [60621178]

This machine complies strictly with the European Regulations on the electro-magnetic emissions. However, interference may arise as a result of add-on equipment which may not necessarily meet the required standards. As such interference can result in serious malfunction of the unit and/or create unsafe situations, you must observe the following:

- Ensure that each piece of non- CASE equipment fitted to the machine bears the CE mark.
- The maximum power of emission equipment (radio, telephones, etc.) must not exceed the limits imposed by the national authorities of the country where you use the machine.
- The electromagnetic field generated by the add on system should not exceed **24 V/m** at any time and at any location in the proximity of electronic components.

Failure to comply with these rules will render the CASE CONSTRUCTION warranty null and void.

2 - SAFETY INFORMATION

Safety rules and signal word definitions [60621258]

Personal safety



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible death or injury.

Throughout this manual and on machine decals, you will find the signal words DANGER, WARNING, and CAUTION followed by special instructions. These precautions are intended for the personal safety of you and those working with you.

Read and understand all the safety messages in this manual before you operate or service the machine.

 **DANGER** indicates a hazardous situation which, if not avoided, will result in death or serious injury. The color associated with DANGER is RED.

 **WARNING** indicates a hazardous situation which, if not avoided, could result in death or serious injury. The color associated with WARNING is ORANGE.

 **CAUTION**, used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury. The color associated with CAUTION is YELLOW.

FAILURE TO FOLLOW DANGER, WARNING, AND CAUTION MESSAGES COULD RESULT IN DEATH OR SERIOUS INJURY.

Machine safety

NOTICE: Notice indicates a situation which, if not avoided, could result in machine or property damage. The color associated with Notice is BLUE.

Throughout this manual you will find the signal word Notice followed by special instructions to prevent machine or property damage. The word Notice is used to address practices not related to personal safety.

Information

NOTE: Note indicates additional information which clarifies steps, procedures, or other information in this manual.

Throughout this manual you will find the word Note followed by additional information about a step, procedure, or other information in the manual. The word Note is not intended to address personal safety or property damage.

Personal safety [60621319]

Most accidents involving machine operation and maintenance can be avoided by following basic safety rules and precautions. Read and understand all the safety messages in this manual, the safety manual and the safety signs on the machine before you operate or service the machine. See your dealer if you have any questions.

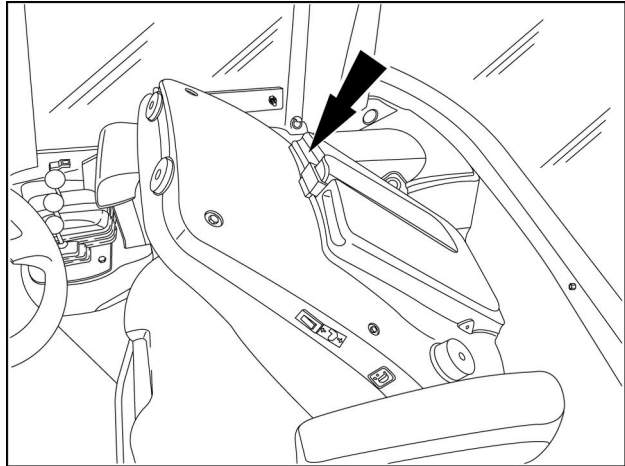
READ THIS MANUAL COMPLETELY and make sure you understand the controls. All equipment has a limit. Make sure you understand the speed, brakes, steering, stability, and load characteristics of the machine before you start to operate this machine.

DO NOT remove this manual or the safety manual from the machine. See your dealer for additional manuals. Also see the manual information on the Title pages (first and second pages in front of the Table of Contents) of this manual.

The safety information given in this manual does not replace safety codes, insurance needs, federal, state, or local laws. Make sure that your machine has the correct equipment according to these rules or laws.

Additional safety messages are used in the text of the manual to show specific safety hazards.

NOTICE: *The safety messages in this chapter point out conditions which can happen during the normal operation and maintenance of your machine. These safety messages also give possible ways of dealing with these conditions.*



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Safety rules - Utility safety [60621369]

⚠ WARNING

Electrical shock hazard!

**Do not work under overhangs or electric wires. Do not work where there is a danger of sliding.
Failure to comply could result in death or serious injury.**

W0215A

Safety precautions must be followed when working near buried and overhead utility lines.

During operation it is likely that you will be working around or near buried or overhead utility lines which may include, but are not limited to:

- Electrical power line
- Gas line
- Water line
- Communication line - telephone or cable television
- Sewer line

NOTICE: Before beginning any machine operation, it is your responsibility to be aware of all such utility lines buried and overhead in the area of your project and to avoid them.

Always have all local utility companies mark the location of their lines.

NOTICE: Check with local authorities for laws, regulations and/or strict penalties requiring you to locate and avoid existing utilities.

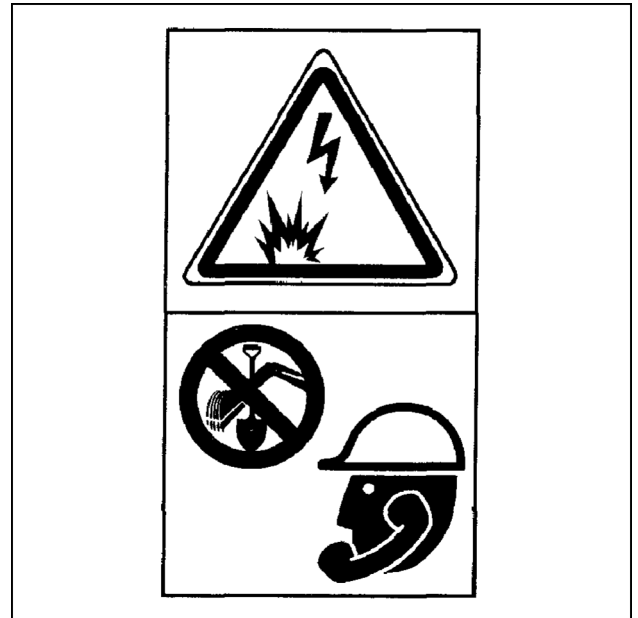
Contact with high voltage power lines, underground cables, etc., can cause serious injury or death from electrocution. Keep machine and attachments a safe distance from electrical power lines as indicated.

VOLTAGE (VOLTS)	SAFETY DISTANCE
50K OR LESS	3.0 m (10 ft)
50K TO 200K	4.5 m (15 ft)
200K TO 350K	5.0 m (20 ft)
350K TO 500K	7.5 m (25 ft)
500K TO 750K	10.5 m (35 ft)
750K OR OVER	13.5 m (45 ft)

Call all local utility companies before you perform any machine operation

Know the utility color code	
Electric	Red
Gas, oil or petroleum	Yellow
Communication, telephone, television	Orange
Water	Blue
Sewer	Green / Brown
Proposed excavation	White
Surveying	Pink
Reclaimed water and slurry	Purple

After locating any buried utility lines, carefully dig a hole by hand and/or automatic vacuum equipment to the utility line to verify the location and depth of the line.



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Safety rules [60621461]



- It is the responsibility of the operator to read and understand the Operator's Manual and other information provided, and use the correct operating procedure. Machines should be operated only by qualified operators.
- Do not operate this machine or perform maintenance work if you have not had appropriate training. Read and fully understand all maintenance instructions before starting any maintenance procedure.
- Be prepared for emergencies. Always have a first aid kit and a working fire extinguisher with you and know how to use each.
- Avoid loose fitting clothing, loose or uncovered long hair, jewelry and loose personal articles.
- Know and use the protective equipment that is to be worn when operating this machine. Hard hats, protective glasses, protective shoes, gloves, reflector type vests, respirators and ear protection are examples of equipment that may be required.
- Certain protective equipment should be replaced and renewed upon age and wear. Old hard hats may not afford the original intended protection. Faded and soiled vests are no longer as highly visible as the original intent. See the manufacturer's recommendation.
- Know and use the hand signals required for particular jobs and know who has the responsibility for signaling.
- Wear the seat belt to maximize the protection capability of a Roll Over Protective Structure (ROPS) when the machine is so equipped.
- Inspect the ROPS and seat belt mounting bolts on a daily basis to insure their integrity.
- Do not permit riders on the machine if there is no manufacturer's designated place for a rider.
- Make sure that all protective guards, canopies, doors, etc. are in place and secure.
- Remove all loose objects stored in the machine. Remove all objects which do not belong in or on the machine and its equipment.

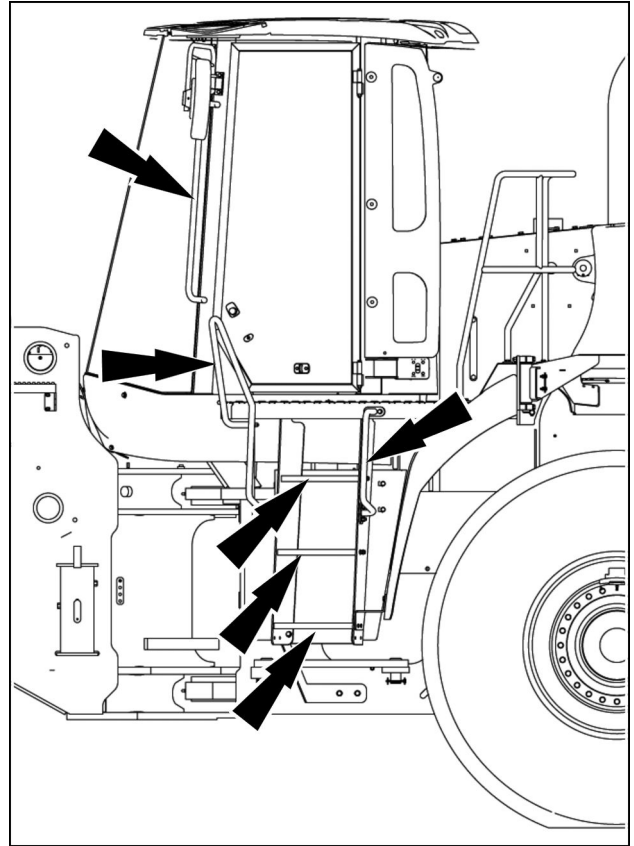
Coupler safety information

- Always inspect the coupler locking pin extension before operating the machine. Position the locking pins in your field of vision and make certain they are engaged properly.
- Improperly locked attachments could release and cause serious injury.
- Do not attempt to engage attachment with locking pins extended.
- Make certain that locking pins and connections are free of dirt or caked on mud before attempting to engage and disengage the attachment.
- Do not extend or retract coupler locking pins with attachment on the ground or in the dump position.
- If any damage is visible on the coupler or attachment points, do not operate or attach bucket.
- If any damage is visible on the coupler or attachment points, do not operate or attach bucket.
- Never stand under an attachment or allow others to do so. Do not allow anyone under elevated loads.
- Do not lift loads or push materials with the coupler without an attachment. This can cause damage to the coupler components.
- Check coupler operation periodically for any unusual movement and/or noise.
- Inspect hydraulic hoses for any leaks or damage.
- Visually inspect welds and make any repairs as necessary.
- Inspect hydraulic hoses for any leaks or damage.
- Check for any loose bolts. Torque as required.
- Do not modify the machine or attachments. Such modifications can damage and/or effect the integrity of the attachment and can effect safety and function of the attachment and/or machine.
- Check all controls in a clear area and make certain the machine is operating correctly.

Safety rules - Getting on and off the machine [60621502]



- Use the recommended hand holds and steps with at least three points of support when getting on and off the machine. The door must be latched and secured in the open position before using the door hand hold. Keep steps and platform clean. Face the machine and use the hand holds and steps adhering to a three-point access system when climbing up and down.
- Do not jump off the machine.
- Do not dismount while the machine is in motion.
- Foreign material or grease on the steps and hand rails can cause an accident. Keep the steps and hand rails clean.



LEEN11T0026BA 1

Safety rules [60621567]



Starting and stopping precautions

- Walk around the machine and warn all personnel who may be servicing the machine or are in the machine path prior to starting. Do not start until all personnel are clearly away from the machine. Sound the horn, if equipped, before starting.
- Walk around the machine's tool, attachment, or furthest contact point to view operation danger area from the work site personnel's view and angle.
- Check that the parking device is applied, place the transmission in neutral or park as specified by the manufacturer, and disengage the PTO, if so equipped, before starting the machine.
- Adjust, secure and latch the seat and fasten the seat belt before starting the machine.
- Start and operate the machine only from the operator's station.
- Do not bypass the machine's neutral-start system. The neutral-start system must be repaired if it malfunctions.
- Use battery booster cables only in the recommended manner. Improper use can result in battery explosion or unexpected machine motion. Ventilate the battery area before using booster cables. Make sure that using jumper cables will not interfere or harm electronic processing or computer devices.
- Do not operate the engine in an enclosed area without adequate ventilation.
- Park the machine on level ground whenever possible and apply the parking brake. On grades, park the machine with the wheels or track securely blocked.
- Before leaving the operator's station, lower the bucket/attachment to the ground and shut off the engine.
- Remove the starter key and/or use the disconnect switch when leaving the machine parked or unattended.

Operating precautions [60621652]



- Check brakes, steering and other machine control devices in accordance with the manufacturer's instructions prior to starting operation. Observe all gauges or warning instruments for proper operation. Operate all controls to insure proper operation. If any malfunctions are found, remove the starter key or disconnect switch key. Place a DO NOT OPERATE tag on the machine until the malfunction is corrected.
- If a failure that causes loss of control such as steering, service brakes, or engine occurs, stop the machine motion as quickly as possible, remove the starter key or disconnect switch key. Place a DO NOT OPERATE tag on the machine, and keep it securely parked until the malfunction is corrected or the machine can be safely towed.
- Understand the machine limitations, and keep the machine under control.
- Operate and drive the machine with care and at speed compatible with conditions. Use extra caution when operating over rough ground, on slopes, and when turning.
- Note and avoid all hazards and obstructions such as ditches, underground lines, trees, cliffs, overhead electrical wires, or areas where there is danger of a slide.
- Carry loads in recommended positions for maximum stability.
- Never lift loads in excess of capacity.
- Use the recommended machine ballast and counterweighting.
- Know and understand the job site traffic flow patterns and obey signalmen, road signs, and flagmen.
- Know and understand that job site conditions may change on an hourly basis. Hills of dirt, debris or obstructions may grow and change from the time you began the day. It is your responsibility to monitor the changes and keep the machine, tools and attachments, etc. a safe distance.
- Watch for bystanders and never allow anyone to be under or to reach through the machine and its equipment while operating.
- Select a gear that will prevent excessive speed when going downhill. Do not coast downhill.
- When roading a machine, know and use the signaling devices required on the machine. Provide an escort for roading where required.
- On machines with independently operated wheel brakes, lock the brake pedals together when roading to provide equalized brake application.
- Use the recommended transport devices when roading the machine. Proper lights, flashers, signals, and beacons may be required. Use reflective slow moving vehicle signs where necessary. Follow local, state, and federal regulations.
- Use the approved drawbar and/or attachment point when using the machine for towing. If a cable or chain is used, keep people away from the tow line.
- Before you operate at night, check that all lamps illuminate.
- If your machine has a cab, make sure that all windows are clean and that the windshield wipers and washers work correctly.
- Engine exhaust fumes can cause death. If you operate this machine in an enclosed area, make sure there is ventilation to replace the exhaust fumes with fresh air.
- Check all controls in a clear area and make sure the machine is operating correctly. Dust, fog, smoke, etc., can decrease your vision and cause an accident. Stop the machine or decrease the speed until you can see.
- Contact with high voltage power lines, underground cables, etc., can cause serious injury or death from electrocution.
- Before you drive or operate in an area with high voltage lines, cables, or a power station, tell the power or utility company what you are going to do. You **MUST HAVE THE POWER DISCONNECTED OR KEEP A SAFE WORKING DISTANCE** from the lines, cables, or power station.
- Keep all parts of the machine a safe distance away from the power source. You must also know any federal, state/provincial, or local safety codes or regulations that apply to the job site.
- If a part of the machine touches high voltage power:
 1. Warn other workers **NOT TO TOUCH THE MACHINE** and to stay away from the machine.
 2. If you can break contact, reverse the operation that caused contact with the high voltage power, and move the machine away from the danger area. If you cannot break contact stay in the machine until the utility company de-energizes the line and tells you that the power is off.
- If you have extreme conditions, such as a fire, etc., and you are forced to leave the machine, do not step off the machine. Jump as far from the machine as possible with your feet together and do not touch the ground with your hands.
- Do not operate the machine if you do not feel well. This can be dangerous for you and for the people around you.

2 - SAFETY INFORMATION

- You must make a judgment if weather, road, or earth conditions will permit safe operation on a hill, ramp, or rough ground.
- Stay away from hazardous areas such as ditches, overhangs, etc. Walk around the work area before you start and look for hazards.
- Be alert and always know the location of all workers in your area. Keep all other persons completely away from your machine. Injury or death can result if you do not follow these instructions.
- Develop fluid and smooth operating techniques, and maintain the surface condition where the machine travels in order to control vibration transfer to the operator.

Maintenance precautions [60621721]



- Do not attempt repairs unless trained. Refer to manuals and experienced repair personnel for help.
- Before you service the machine, always place a DO NOT OPERATE tag on the key switch. Make sure that the machine is clearly “tagged out”.
- Wear protective glasses and other required safety equipment when servicing or repairing the machine.
- Wear gloves to protect hands when handling cable.
- Disconnect the battery before working on the electrical system. Know the consequences of disconnecting any electronic or computer devices.
- Avoid lubrication or mechanical adjustments with the machine in motion or the engine operating. If the engine must be in operation to make certain adjustments, place the transmission in neutral, apply the parking device, place the bucket/attachment in a safe position, securely block the wheels and use extreme caution.
- Securely block the machine or any component that may fall before working on the machine or component. If possible, use a back up or secondary blocking device as well.
- Unexpected vehicle movement can result in death or serious injury. Apply parking brake, turn off engine and secure machine with wheel chocks.
- To prevent unexpected movement, securely block working elements when repairing or changing working tool parts such as cutting edges.
- Never make repairs on pressurized components, fluid, gas or mechanical until the pressure has been relieved according to the manufacturer's instructions.
- Use extreme caution when removing radiator, reservoir, or tank caps, drain plugs, grease fittings or pressure taps. Park the machine and let it cool before opening a pressurized tank.
- Release all pressure before working on systems which have an accumulator.
- Hydraulic oil or diesel fuel leaking under pressure can penetrate the skin and cause infection or other injuries. To prevent personal injury, relieve all pressure before disconnecting fluid lines or performing work on the hydraulic system. Before applying pressure, make certain all connections are tight and components are in good condition.
- Use a piece of cardboard, newspaper, or wood to check for any pressurized leaks to prevent fluid penetrating the skin. Pressurize accumulators with the proper gas according to manufacturer's recommendations.
- When inflating tires, use a self-attaching inflation chuck with remote shutoff and stand clear of the tire. Position yourself beside the tire and not beside the rim.
- Towing this machine is not recommended.
- When absolutely necessary to tow the machine, do not exceed the recommended towing speed. Be sure the towing machine has sufficient braking capacity to stop the towed load. If the towed machine cannot be braked, a tow bar must be used or two towing machines must be used - one in front pulling and one in the rear to act as a brake. Avoid towing over long distances.
- Always observe proper maintenance procedures.
- Always replace all missing, illegible or damaged safety signs or decals as necessary. Keeps all safety signs and decals clean and legible.

Observe proper maintenance procedures

- Whenever servicing or replacing hardened pins, etc., use a brass drift or other suitable material between the hammer and pin. Alt: Use a brass hammer, drift or suitable material on the pin, etc.
- Keep the brakes and steering systems in good operating condition.

Safety rules Fuel handling [60621845]



- Do not smoke or permit open flames while fueling or near fueling operations.
- Never remove the fuel cap or refuel machines with the engine running or the engine hot. Never allow fuel to spill on hot machine components. Avoid spilling fuel on the ground or contaminating the environment.
- Always maintain control of the fuel filter nozzle when filling the tank. This will help avoid spilling fuel.
- Clean up spilled fuel immediately and dispose of all contaminated material in an environmentally correct manner.
- Tightened the fuel tank cap securely. Should the fuel cap be lost, replace it only with the manufacturer's approved cap. Use of a non-approved cap without proper venting may result in pressurization of the tank.
- Never use gasoline for cleaning purposes.
- Use the correct fuel for the operating season.

Burn prevention [60621966]

WARNING

Battery acid causes burns. Batteries contain sulfuric acid.

Battery electrolyte contains sulfuric acid. Contact with skin and eyes could result in severe irritation and burns. Always wear splash-proof goggles and protective clothing (gloves and aprons). Wash hands after handling.

Failure to comply could result in death or serious injury.

W0120A

- When the battery electrolyte is frozen, the battery can explode if, you try to charge the battery, or if you try to boost start and run the engine. To prevent the battery electrolyte from freezing, try to keep the battery at full charge. If you do not follow these instructions, you or others in the area can be injured.
- Hot coolant can spray out if the cooling system cap is removed. To remove the cap, let the cooling system cool, turn to the first notch, wait until the pressure is released, then remove the cooling system tank cap.

CAUTION

Burn hazard!

Hot coolant can spray out if you remove the filler cap while the system is hot. After the system has cooled, turn the filler cap to the first notch and wait for all pressure to release before proceeding.

Failure to comply could result in minor or moderate injury.

C0043A

Safety rules [60622109]

Hazardous chemicals



- If you are exposed to, or come in contact with, hazardous chemicals you can be seriously injured. The fluids, lubricants, paints, adhesives, coolants, etc. required for the function of the machine can be hazardous. They may be attractive and harmful to domestic animals as well as humans.
- Material Safety Data Sheets (MSDS) provide information about chemical substances within a product, safe handling procedures, first aid measures, and procedures to be taken in the event of a spill or accidental release. MSDS are available from your dealer.
- Before you service the machine, check the MSDS for each lubricant, fluid, etc. used in the machine. This information indicates the associated risks and will help you service the machine safely. Follow the information in the MSDS, on manufacturer's containers, as well as the information in this manual when servicing the machine.
- Dispose of all fluids, filters, and containers in an environmentally safe manner according to local laws and regulations. Check with local environmental and recycling centers or your dealer for correct disposal information.
- Store fluids and filter in accordance with local laws and regulations. Use only appropriate containers for the storage of chemicals or petrochemical substances.
- Keep out of reach of children or other unauthorized persons.

Transporting precautions



- Know the rules, laws, and safety equipment necessary for transporting this machine on a road or highway.
- Use appropriate lighting as defined by local regulations. Make sure the slow moving vehicle (SMV) and or speed indicator (SIS) is visible if driving on a public road or highway.

Fire extinguisher



- A fire extinguisher on board is recommended for all construction equipment.
- Contact your dealer for the type and location of a fire extinguisher for this machine.

Precautions specific to this machine



- Keep the load or bucket/attachment as low as possible while moving the machine around the job site.
- You must know which circuits have accumulators and how to release pressure properly.
- When servicing the machine, turn the machine off, release hydraulic pressure, keep the attachment on the ground, and set the emergency brake. If the machine must be serviced with the lift arms up, always use the lift arm support strut with the bolt turned completely in.

Seat belt precautions [60622193]

⚠ WARNING

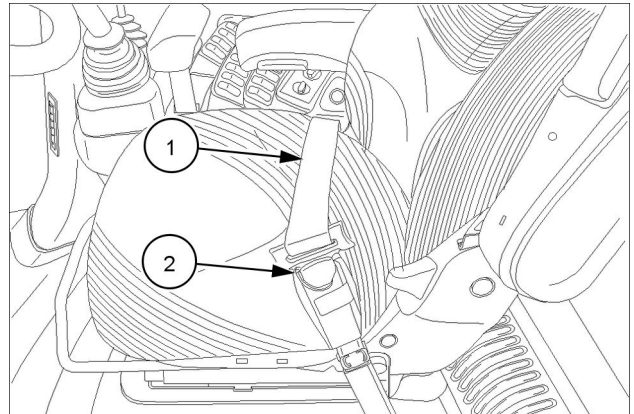
Roll-over hazard!

Securely fasten the seat belt. Your machine is equipped with a Roll-Over Protective Structure (ROPS) cab, ROPS canopy, or ROPS frame for your protection. The seat belt can help ensure your safety if it is properly used and maintained. Never wear a seat belt loosely or with slack in the belt system.

Failure to comply could result in death or serious injury.

W0143A

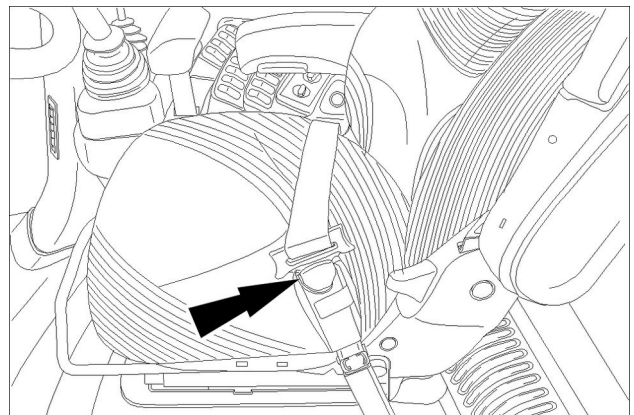
1. Insert the metal end of the right-hand belt strap into the latch mechanism on the left-hand side of the seat.
2. Tighten the seat belt by pulling on the loose end of the right-hand seat belt.



RCPH10WHL090BAL 1

1. Right-hand belt strap
2. Latch mechanism

1. To unlatch the seat belt, press the red button on the left-hand side mechanism.



RCPH10WHL090BAL 2

Support strut for loader lift arm - Support strut and service link [60622288]

⚠ DANGER

Crushing hazard!

If you service the machine with the loader lift arms raised, always use the support strut. Remove the retaining pin and place the support strut onto the cylinder rod. Install the retaining pin into the support strut. Lower the lift arms onto the support strut.

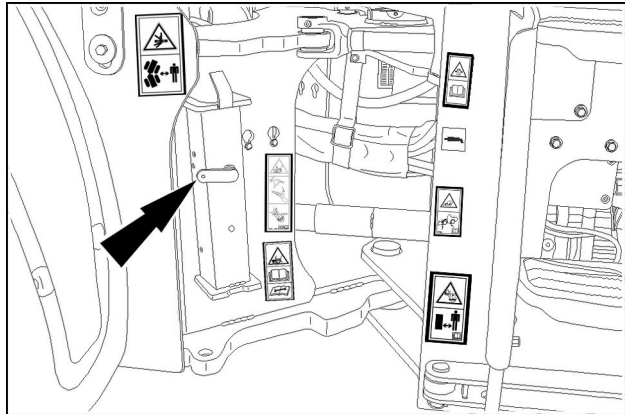
Failure to comply will result in death or serious injury.

D0084A

If you service the machine with the loader lift arms raised, always use the support strut.

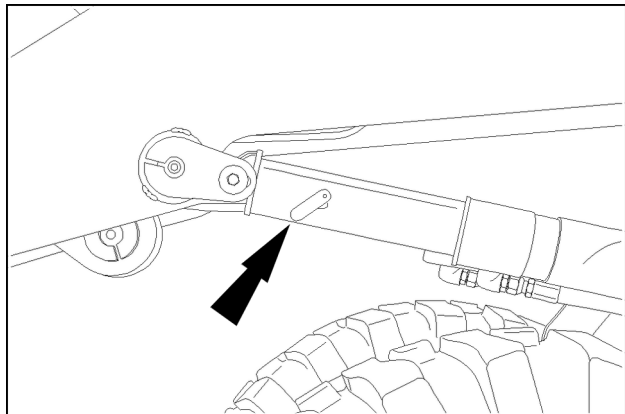
Support strut

1. Empty the loader bucket, raise the loader lift arms to approximately **2.1 m (7 ft)** and stop the engine. Remove the support strut from the storage position by removing the retaining bolt.



LEIL12WHL0006BA 1

2. Place the support strut onto the cylinder rod with guide lock tab on top of cylinder and pointing toward the bucket. Install the retaining bolt entirely into the support strut using all threads. Slowly lower the lift arms onto the support strut.



RCPH10WHL061BAL 2

Transport service link

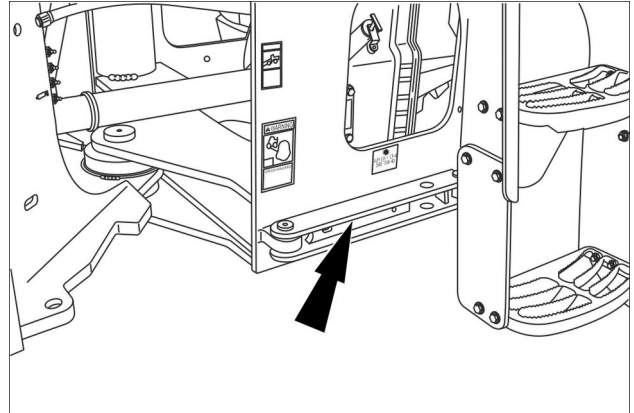
⚠ WARNING

Crushing hazard!
Engage the safety lock link before service or transport.
Failure to comply could result in death or serious injury.

W1154A

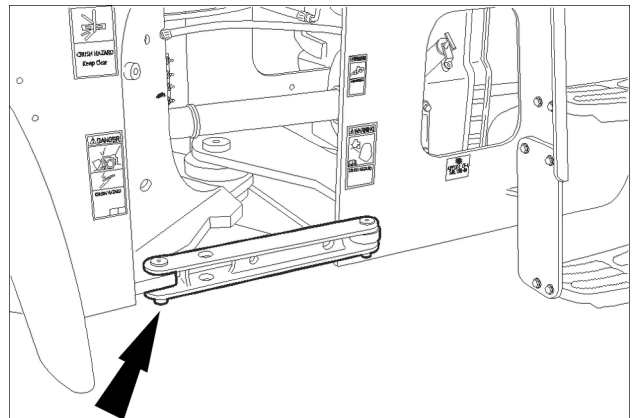
Prior to any maintenance, service work or transportation, lock the articulation transport service link.

1. Remove the safety security pin to change positions of the service link.



RCPH10WHL062BAL 3

2. Move the service link into the locked position to prevent articulation. Insert the safety security pin.



RCPH10WHL063BAL 4

Safety signs [101128219]

Decals

WARNING

Avoid injury!

Make sure decals are perfectly legible. Clean decals regularly. Replace all damaged, missing, painted over, or illegible decals. See your dealer for replacement decals. When replacing parts bearing decals, be sure to put new decals on each new part.

Failure to comply could result in death or serious injury.

W0229A

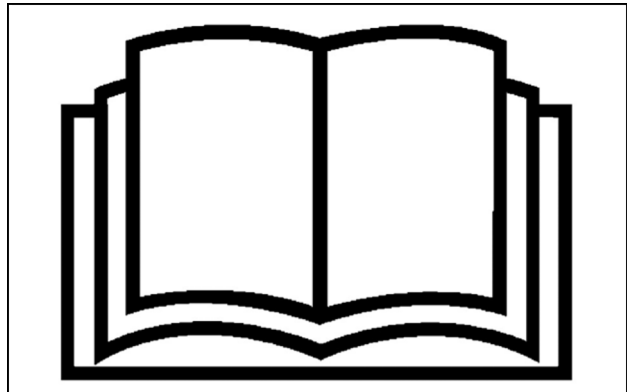
NOTE: Make sure that you read all the safety decals and all instructional decals. The decals are intended for the personal safety of you and those working with you. Walk around your machine and note the content and location of the decals. Review the decals with all machine operators.

NOTE: Some decal locations may vary slightly between various model configurations.

NOTE: When you clean the decals, use only a cloth, water and soap. Do not use solvents, gasoline, etc.

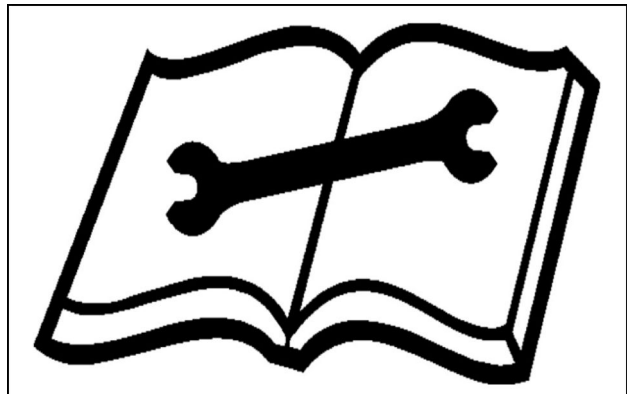
NOTE: This chapter only covers decals relating to safety and machine operation and servicing. For information on all decals for the machine, consult your authorized dealer.

This symbol instructs you to refer the Operator's Manual for further information regarding maintenance, operational guidelines, etc.

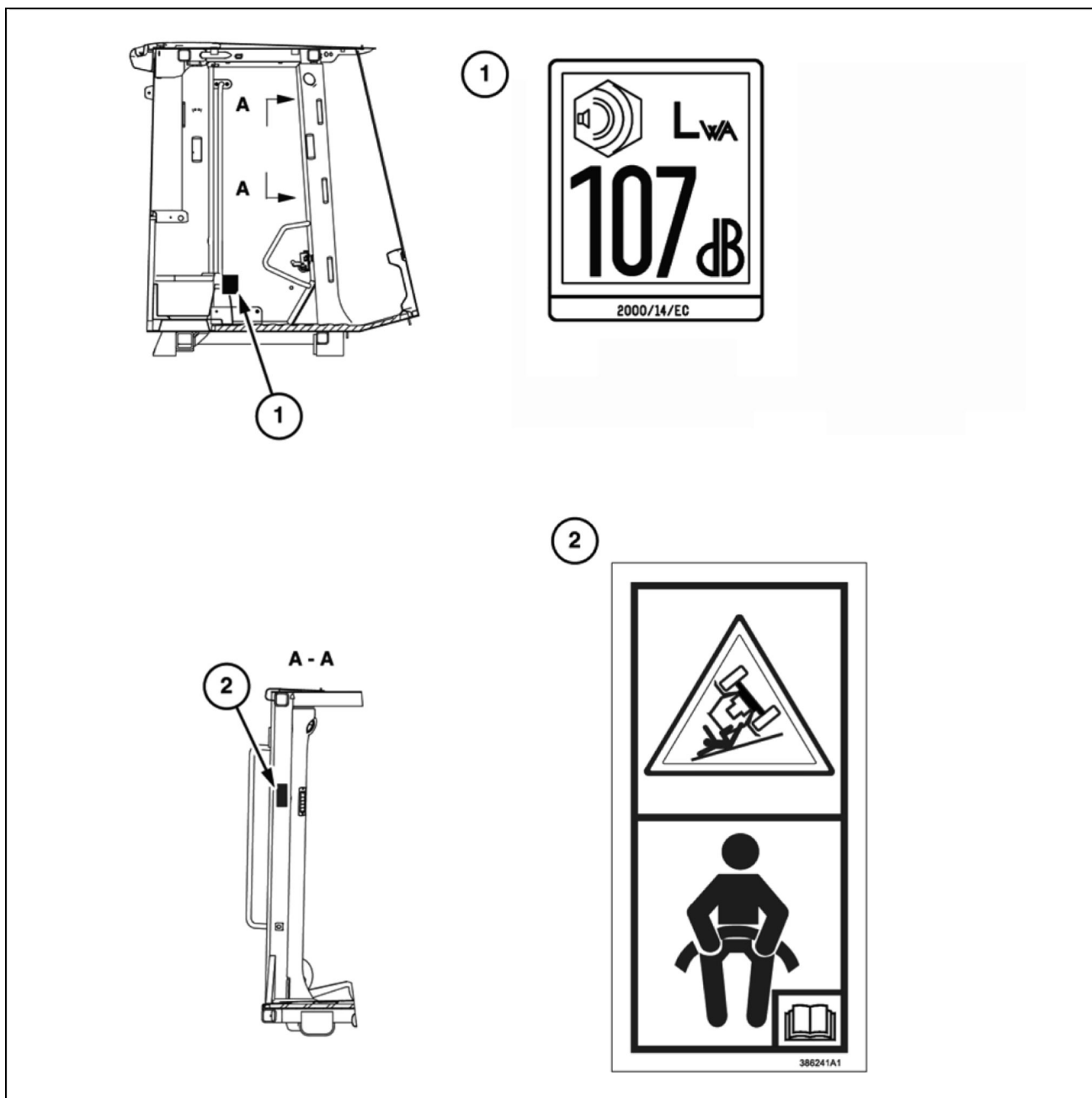


LEEN11T0027AA 1

This symbol instructs you to refer to the Service Manual. If you doubt your ability to perform service operations, contact your authorized dealer.

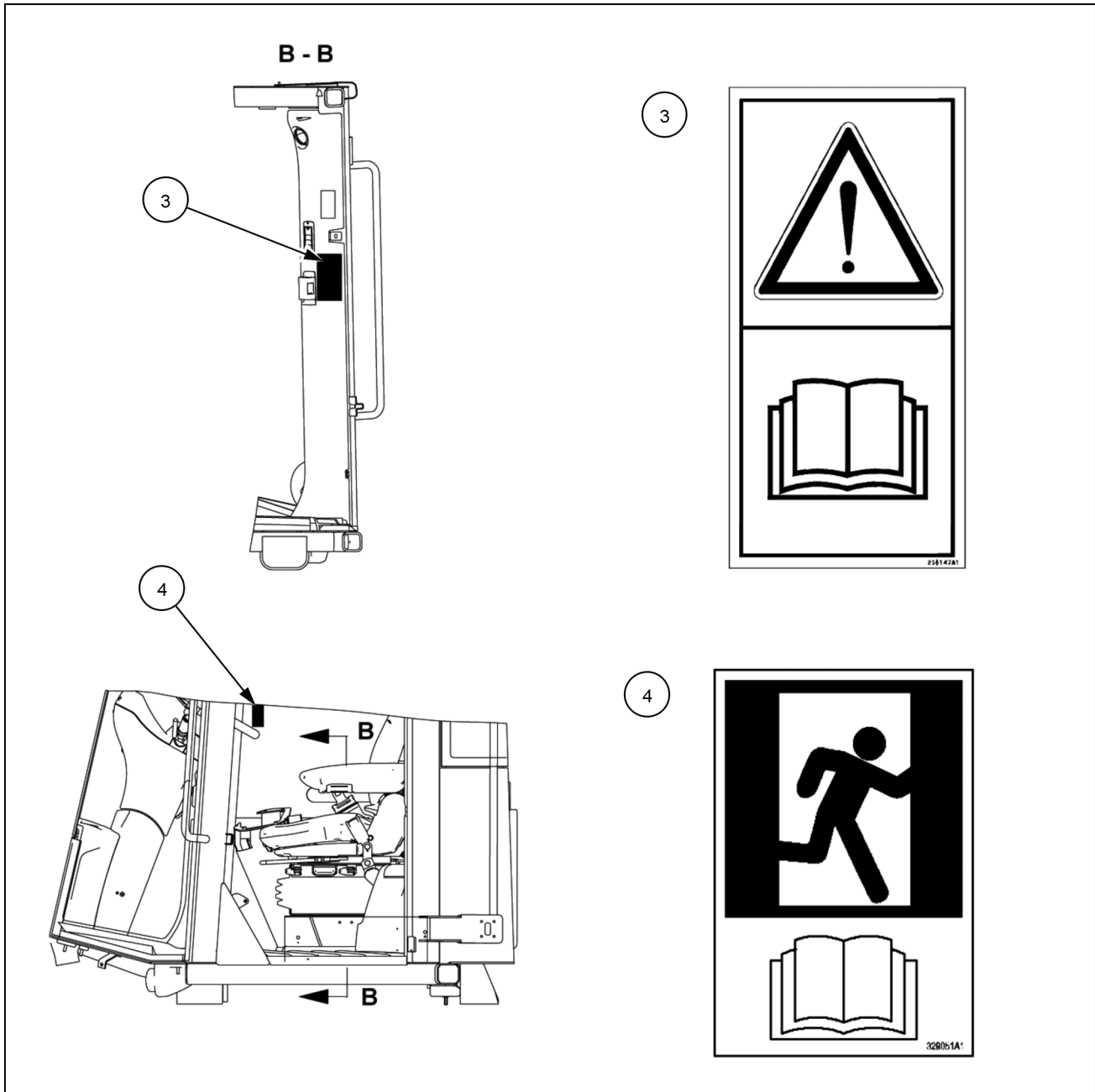


LEEN11T0028AA 2



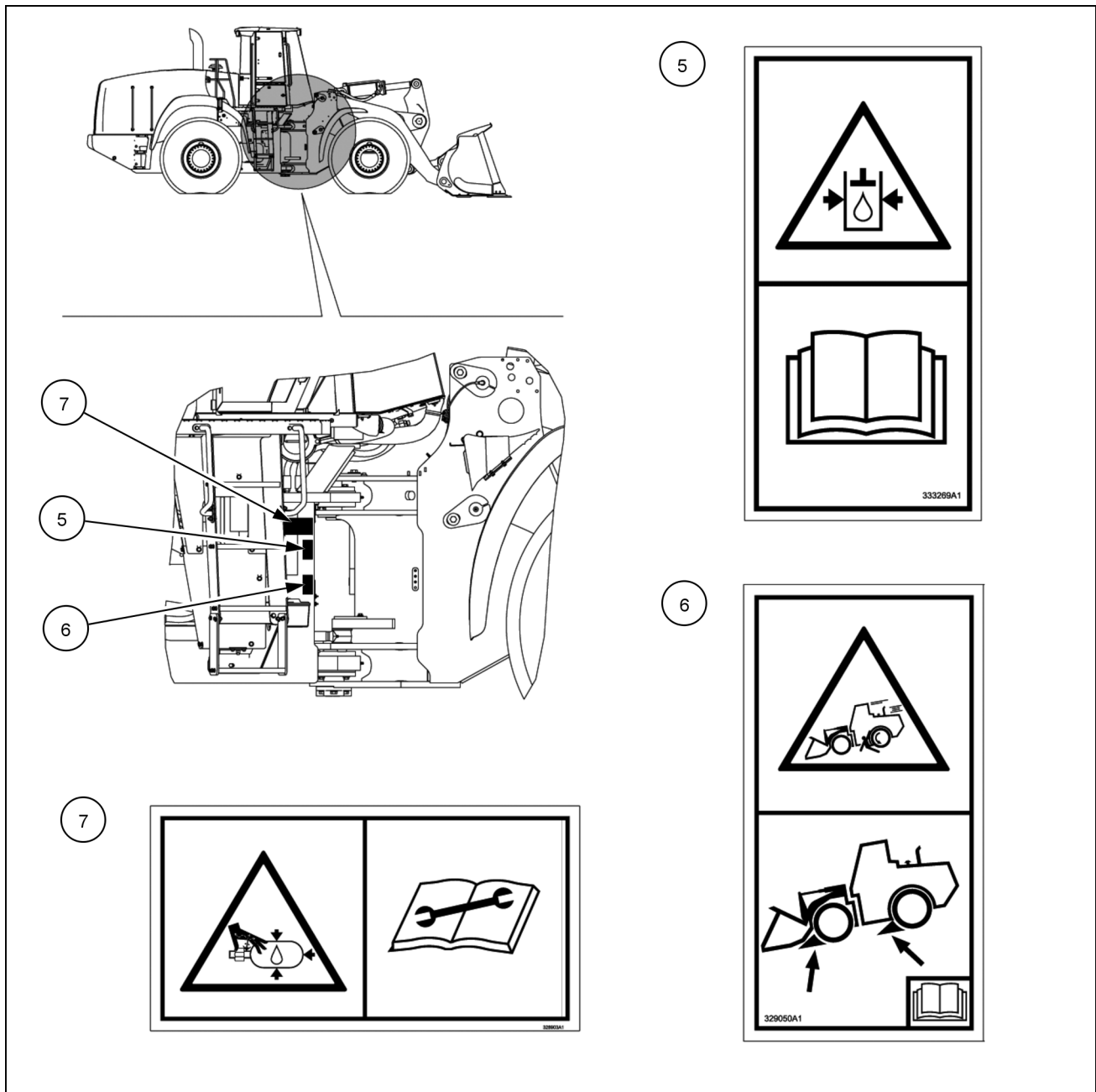
LEIL12WHL0029BA 3

1. Sound Power level
2. Wear the seat safety belt.
The safety belt protects the operator from being ejected from the cab or seat in the event of roll-over.



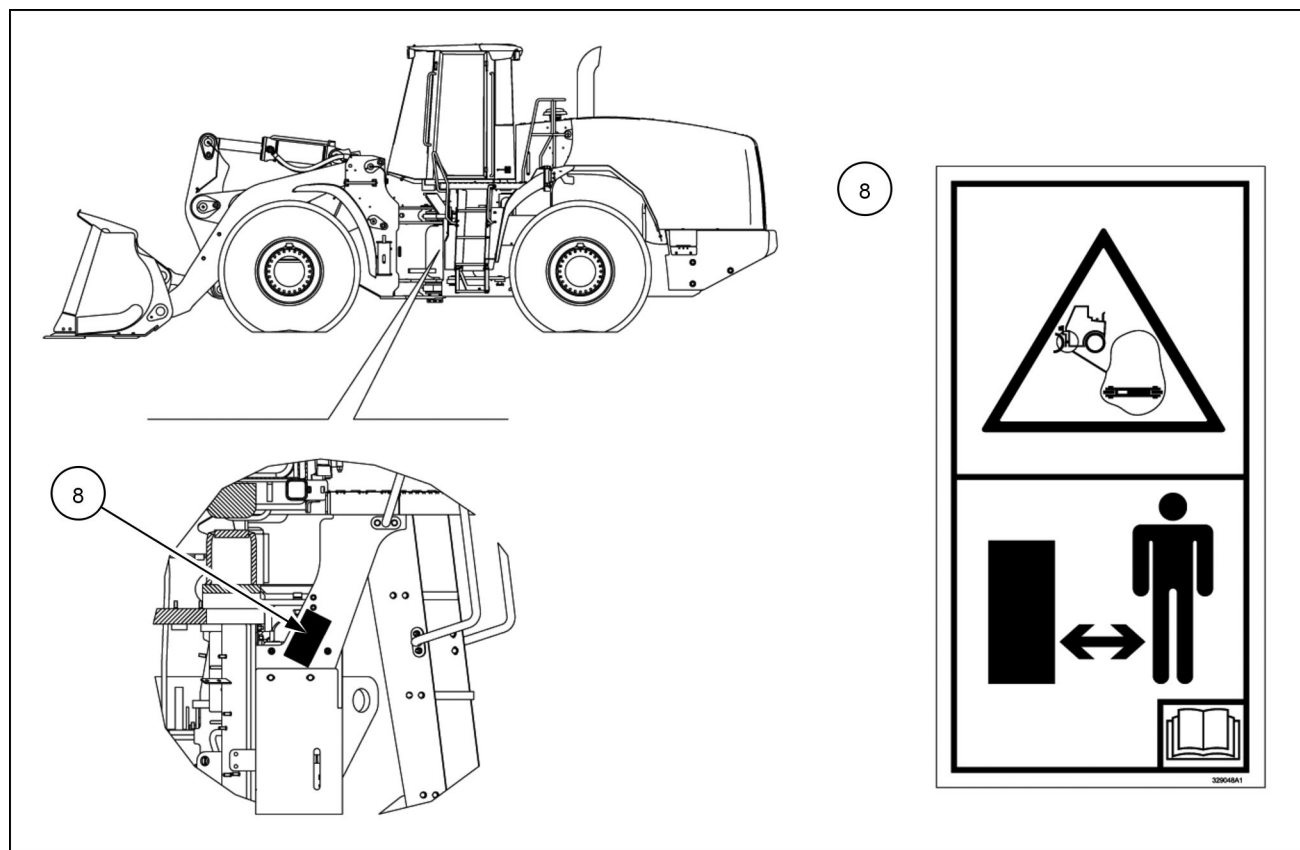
LEEN11T0029GA 4

3. Before starting or operating the machine when working, follow the instructions and comply with safety rules.
4. In the event of an emergency, e.g., if the door cannot be opened, use as an emergency exit in order to leave the machine cab.



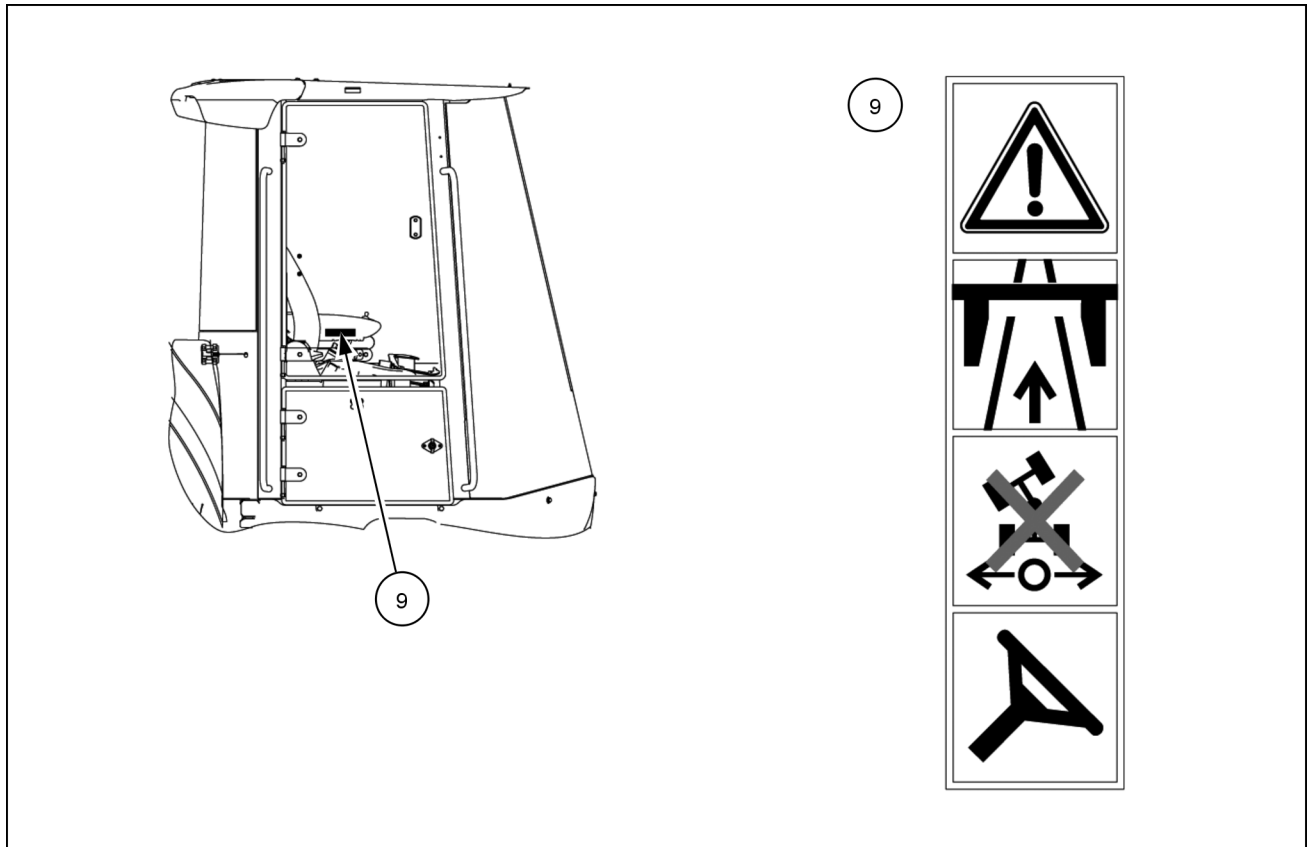
LEEN11T0030GA 5

5. Pressurized system. The pressure must be discharged before maintenance is carried out in order to prevent serious or fatal accidents. Read the Operator's Manual.
6. Park the machine on level ground whenever possible and apply the parking brake. On grades, park the machine with the wheels on track securely blocked. Failure to comply, could result in serious injury or death.
7. Fluids under pressure warning plate.
Release all pressure before working on systems which have an accumulator.



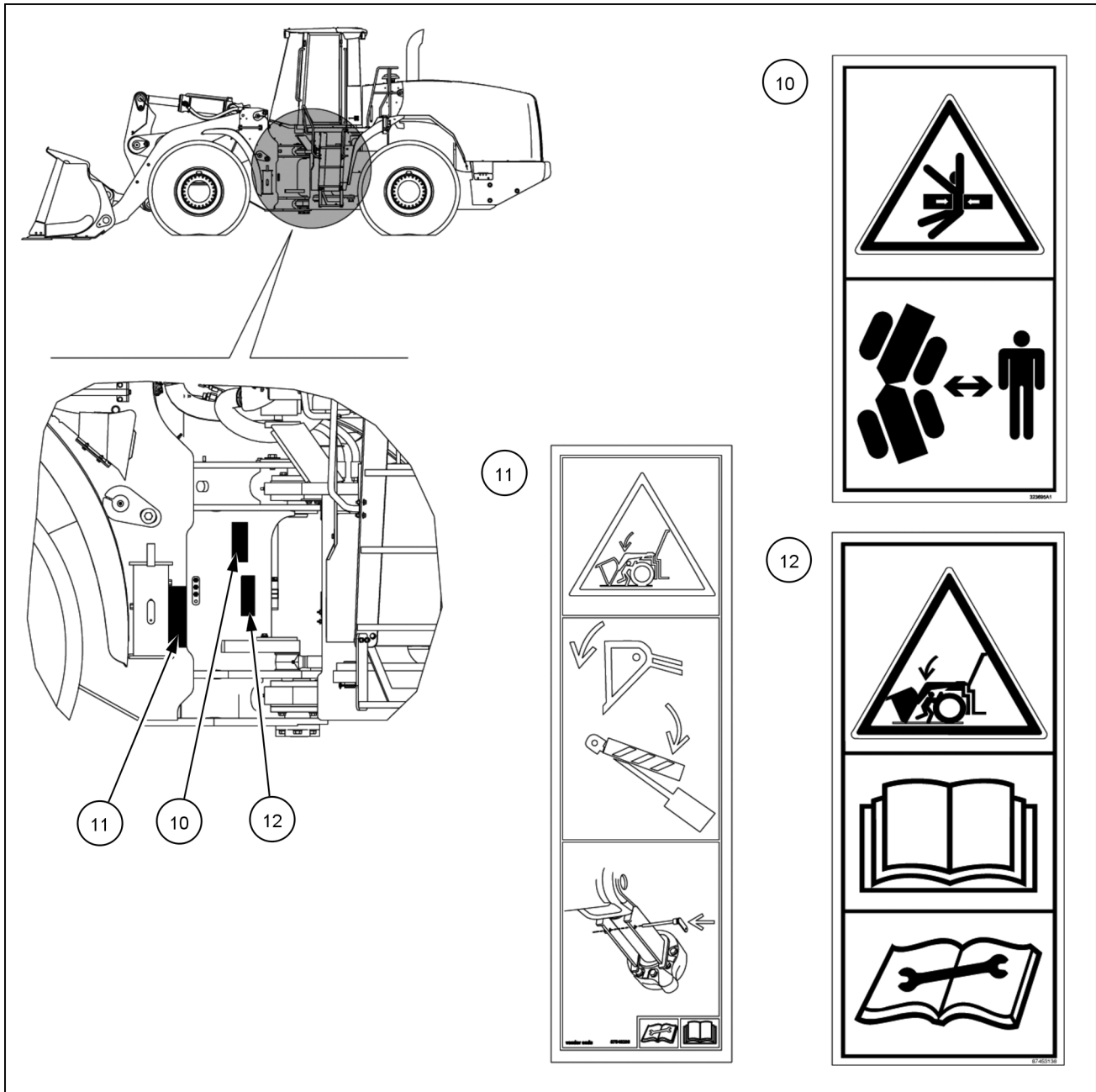
LEEN11T0031FA 6

8. Insert the safety bar before carrying out maintenance or transport to avoid any crushing hazard.



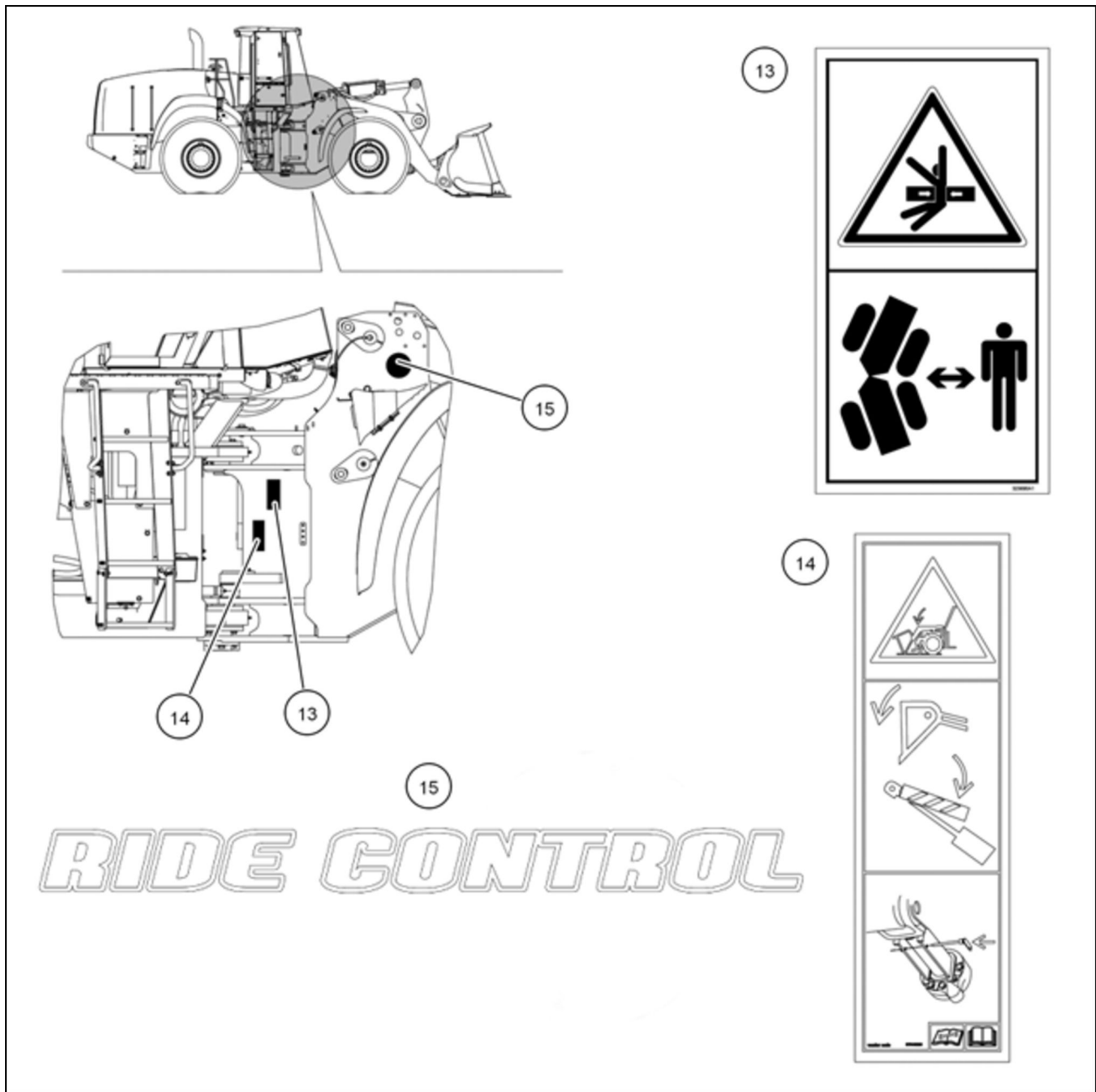
LEEN11T0032FA 7

9. Do not use joystick steering when roading a machine.



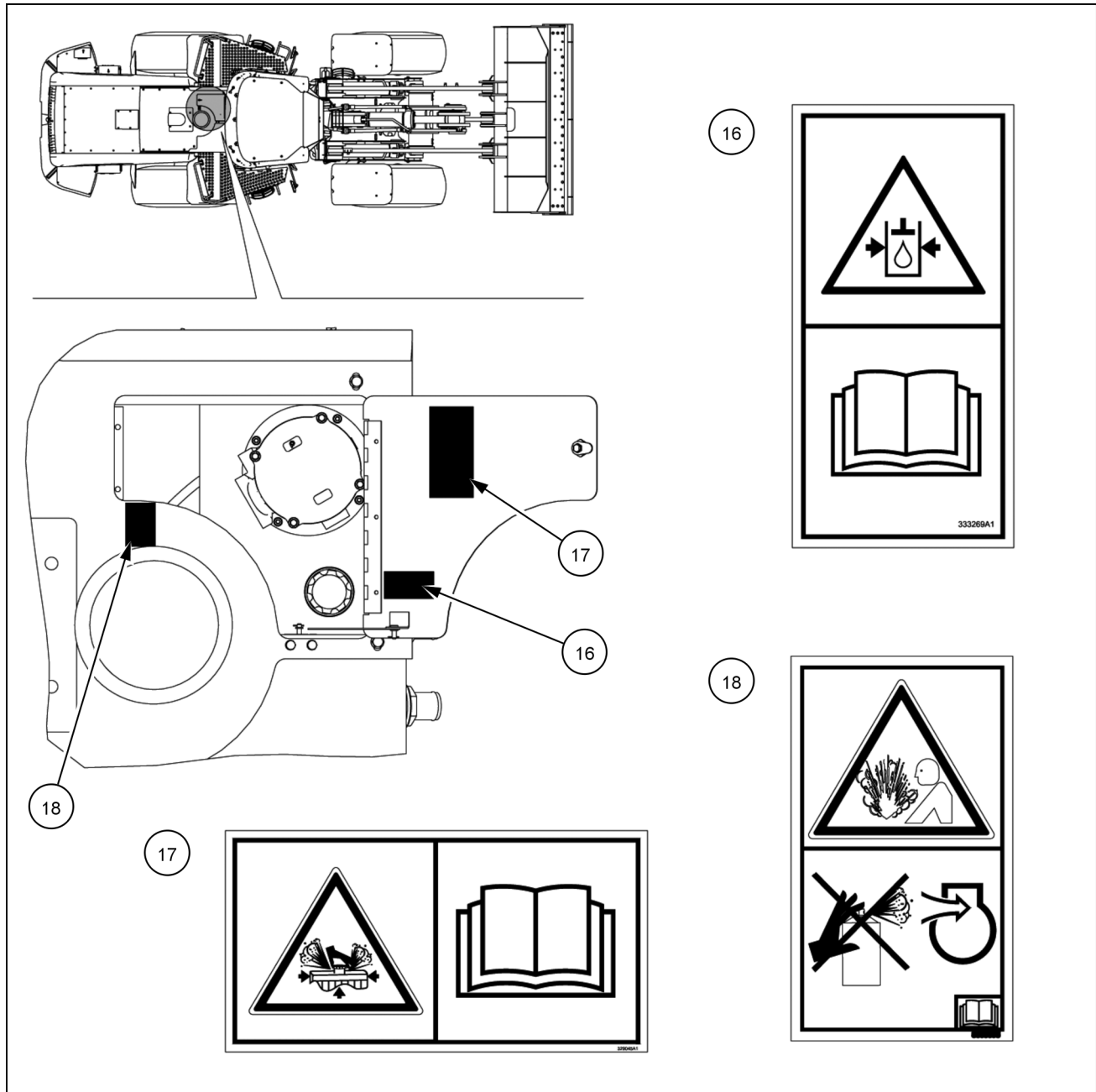
LEEN11T0034GA_1 8

10. Do not stand in this area when the engine of the machine is running. The steering action, can crush the body between the front and the rear module.
11. In case of servicing of the machine with the loaders lift arms raised, install always the support strut on to the cylinder rod. You can cause death or serious injury if the loader lift arms are lowered unexpectedly.
12. Securely block the machine or any component that may fall before working on the machine or component. Failure to comply could result in serious injury or death.



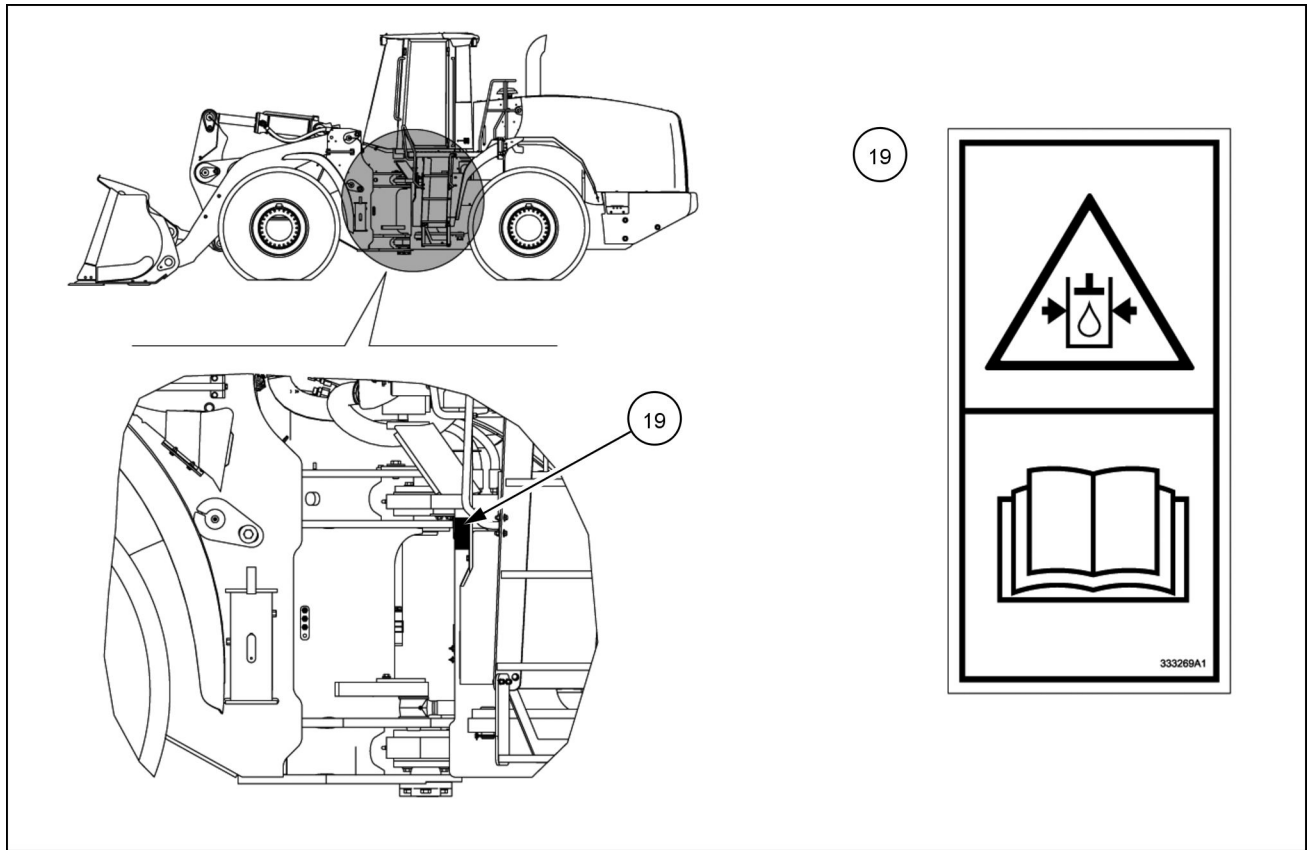
LEIL12WHL0032BA 9

13. Do not stand in this area when the engine of the machine is running. The steering action, can crush the body between the front and the rear module.
14. Securely block the machine or any component that may fall before working on the machine or component. Failure to comply could result in serious injury or death.
15. Decal - Ride Control



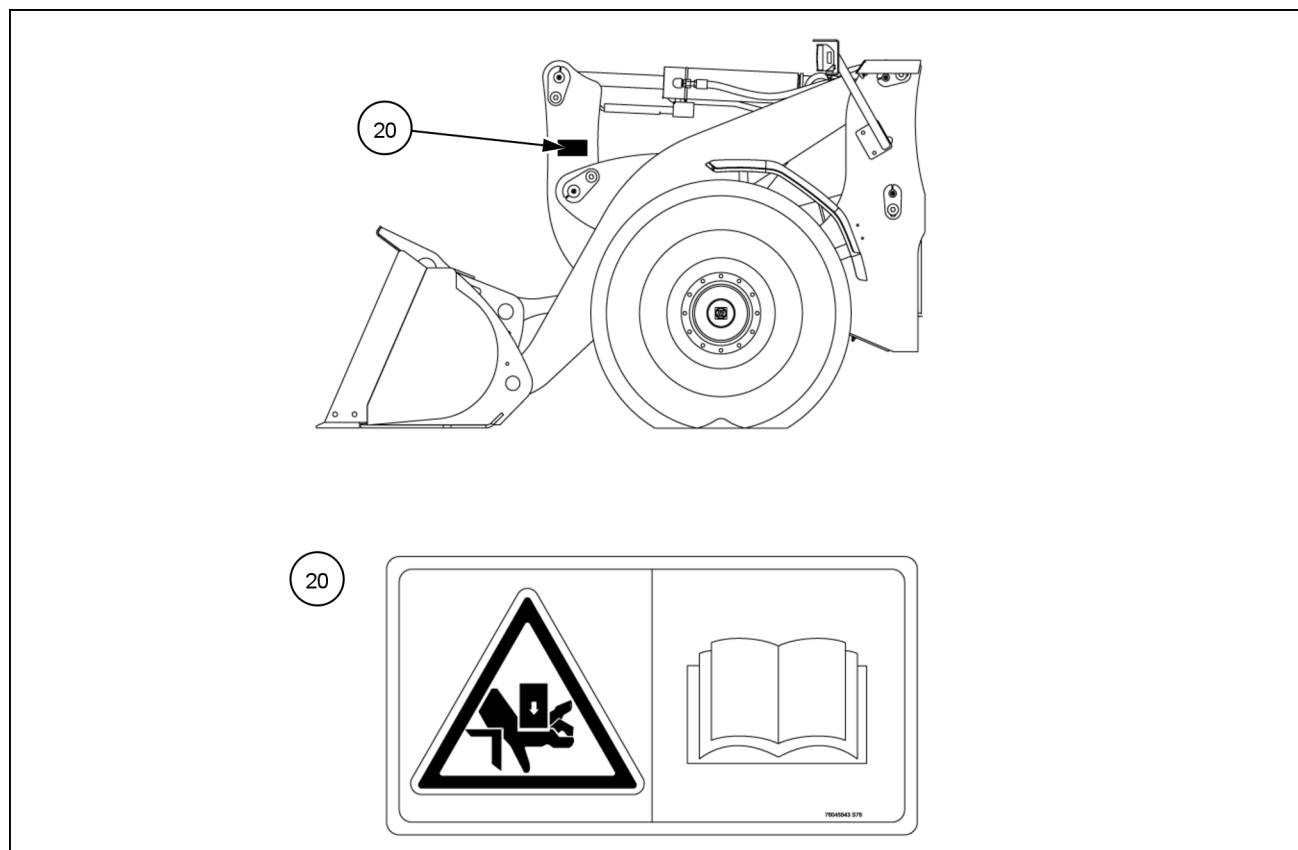
LEEN11T0036GA 10

- 16. Fluids under pressure warning plate. It is recommended to read carefully the rules regulating the maintenance of the cooling and hydraulic systems provided by this Manual.
- 17. Hot liquid under pressure hazard. Loosen the cap very slowly after the engine has cooled.
- 18. Warning - Explosion hazard plate. Do not use ether to start the engine.



LEEN11T0037FA 11

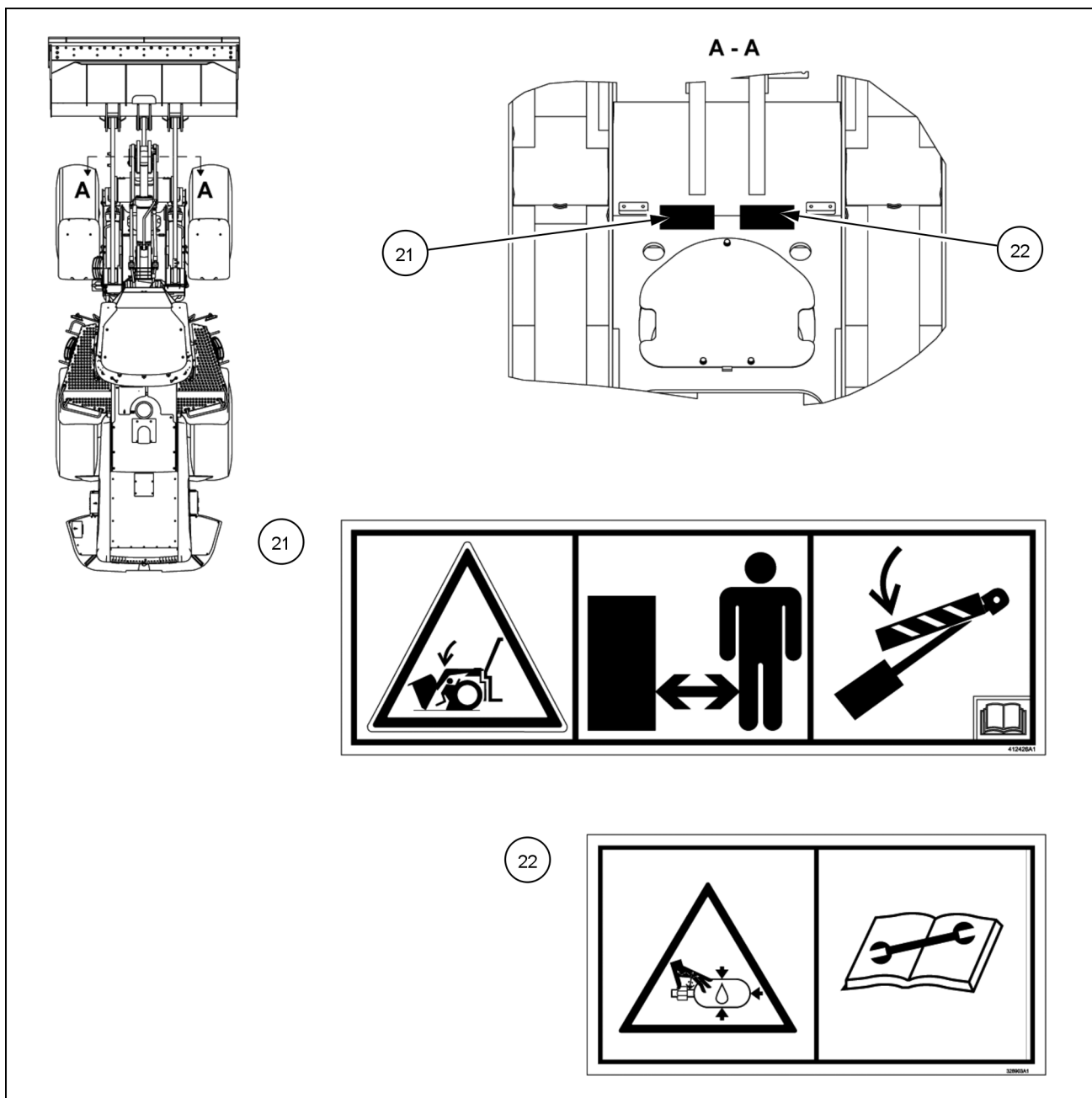
19. Pressurized system. The pressure must be discharged before maintenance is carried out in order to prevent serious or fatal accidents. Read the Operator's Manual.



LEEN11T0038FA 12

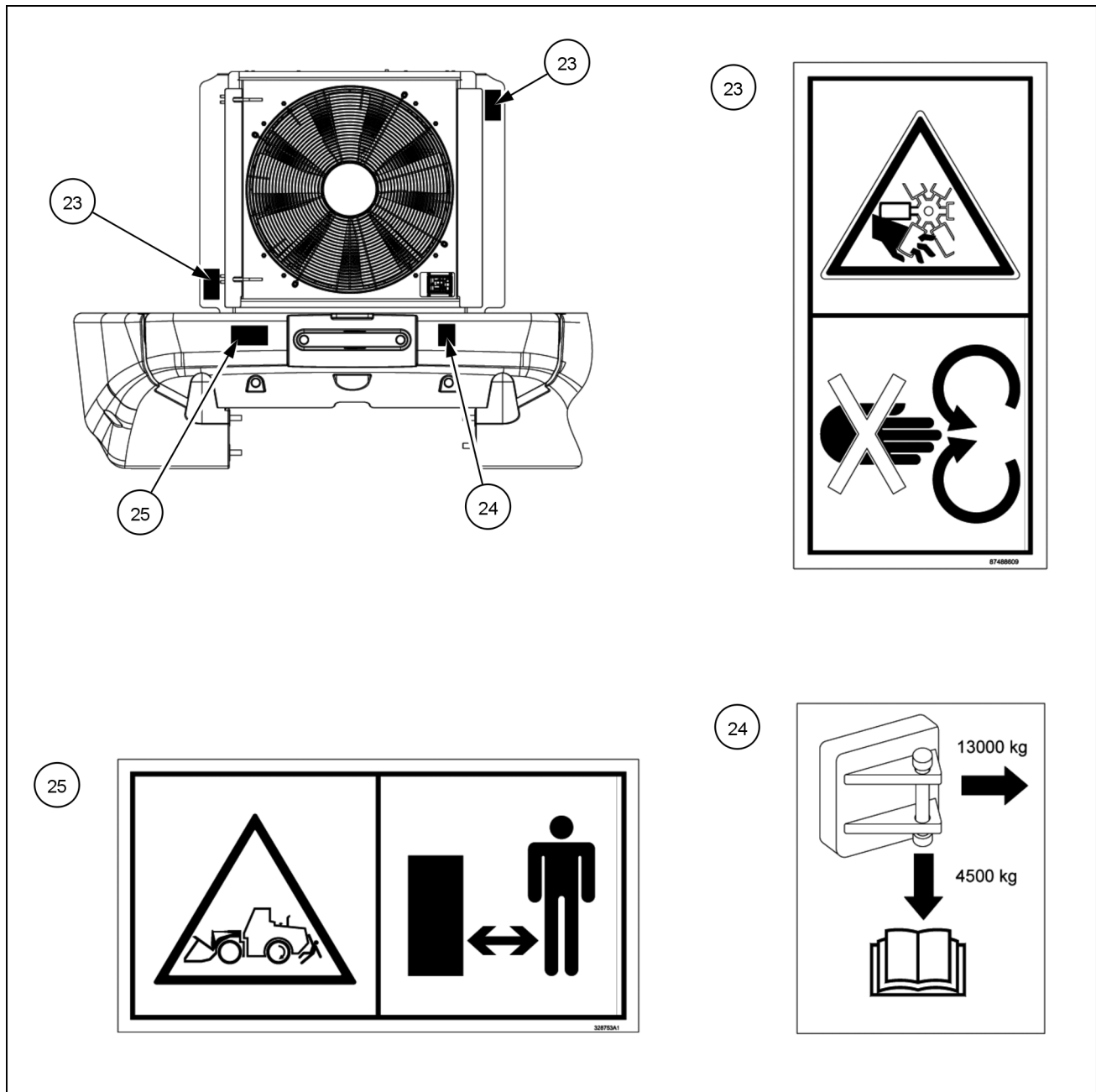
20. Scissors point warning plate.

When the machine or its equipment are moving, do not place limbs or parts of the body between the mechanism of the booms or bucket to prevent the risk of amputation. Read carefully the Safety Rules listed at the beginning of this Manual.



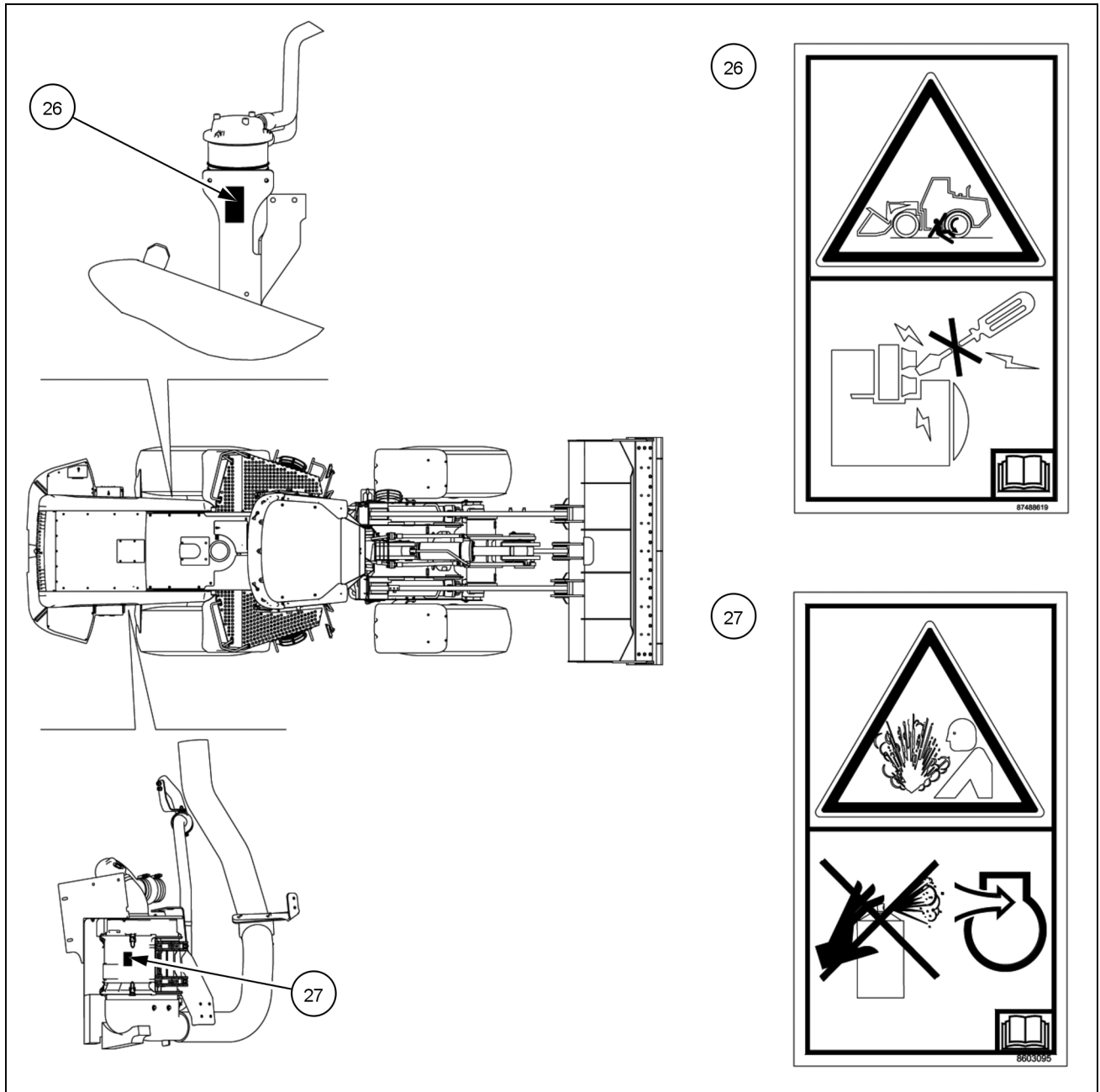
LEEN11T0039GA 13

21. In case of servicing of the machine with the loaders lift arms raised, install always the support strut on to the cylinder rod. You can cause death or serious injury if the loader lift arms are lowered unexpectedly.
22. Fluids under pressure warning plate.
Release all pressure before working on systems which have an accumulator.



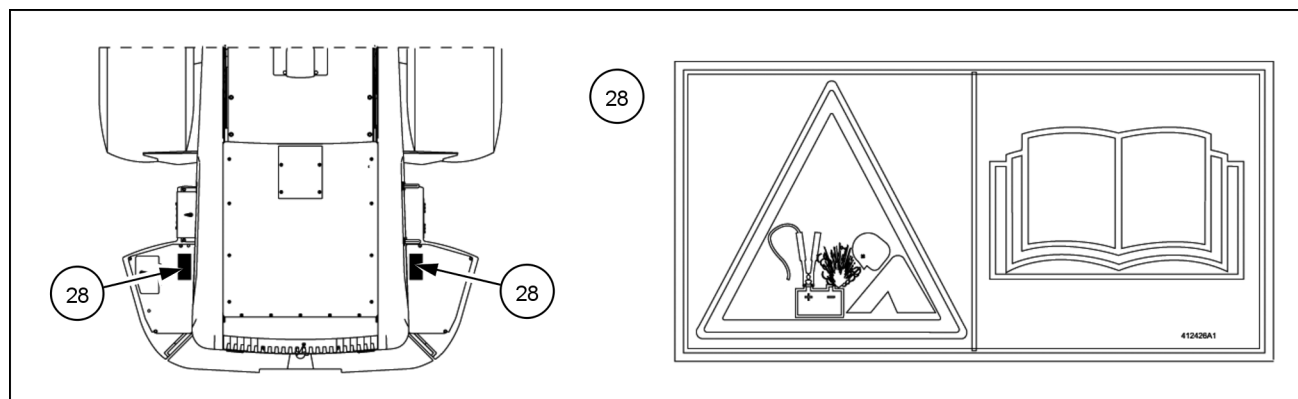
LEEN11T0040GA 14

23. Engine fan and belt warning plate. Do not perform any maintenance with the engine running. Failure to comply could result in serious injury or death.
24. Hitch weight information decal.
25. Warning - Run over hazard plate. Keep clear from the operating area of the machine.



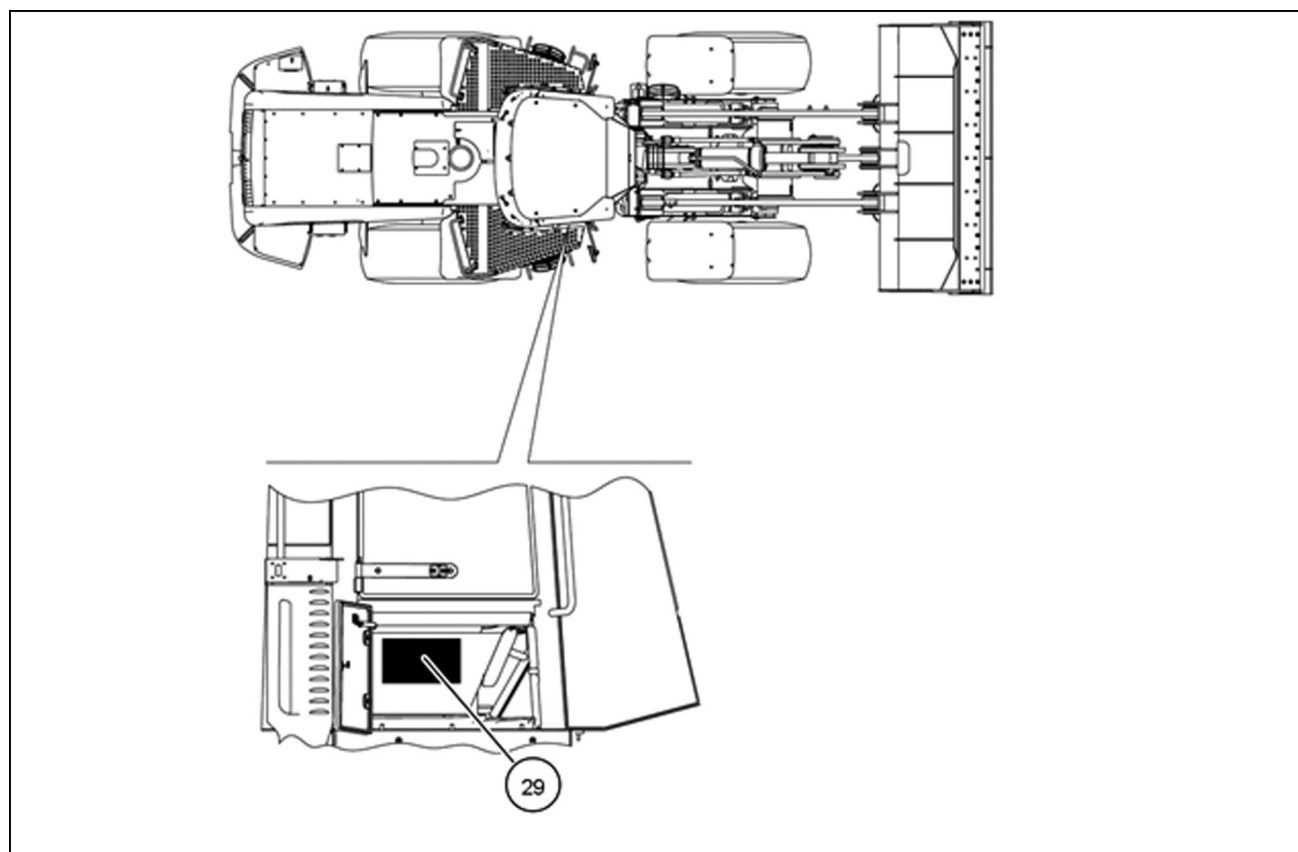
LEEN11T0041GA 15

26. Electrocutation risk warning plate.
Do not short circuit the battery posts with metal objects. Failure to comply could result in death or serious injury.
27. Warning - Explosion hazard plate. Do not use ether to start the engine.



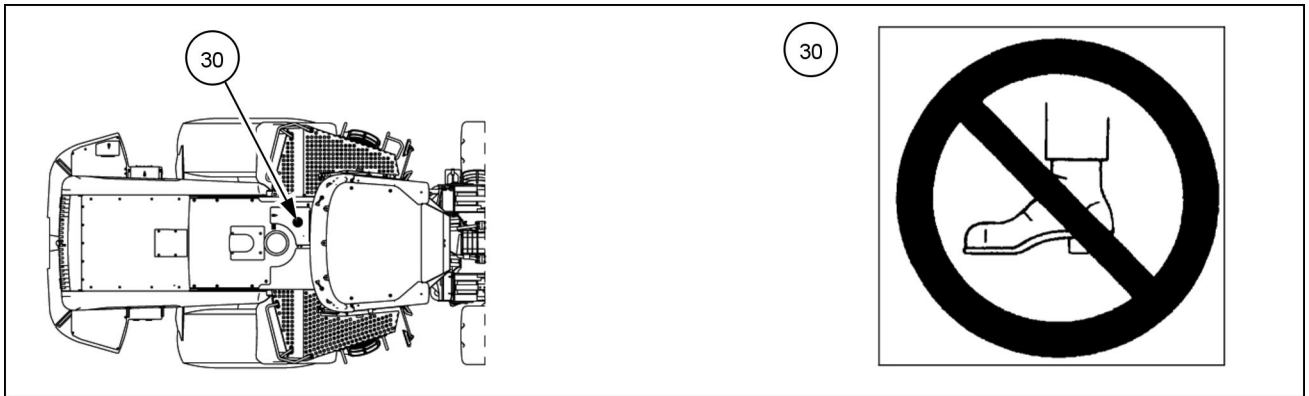
LEEN11T0042EA 16

28. Danger - Battery gas can explode. Read procedure before battery service.



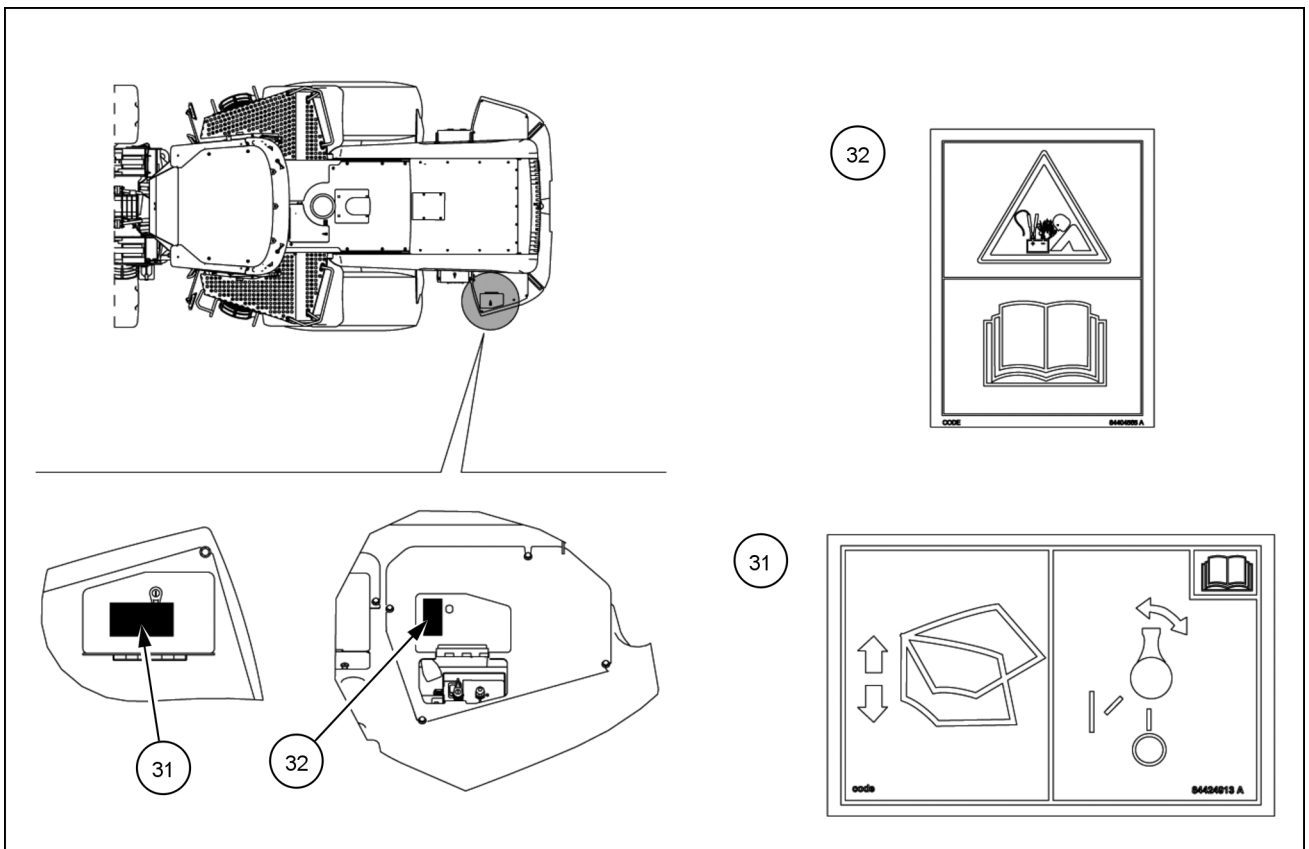
LEIL12WHL0033BA 17

29. Decal maintenance intervals.



LEEN11T0044EA 18

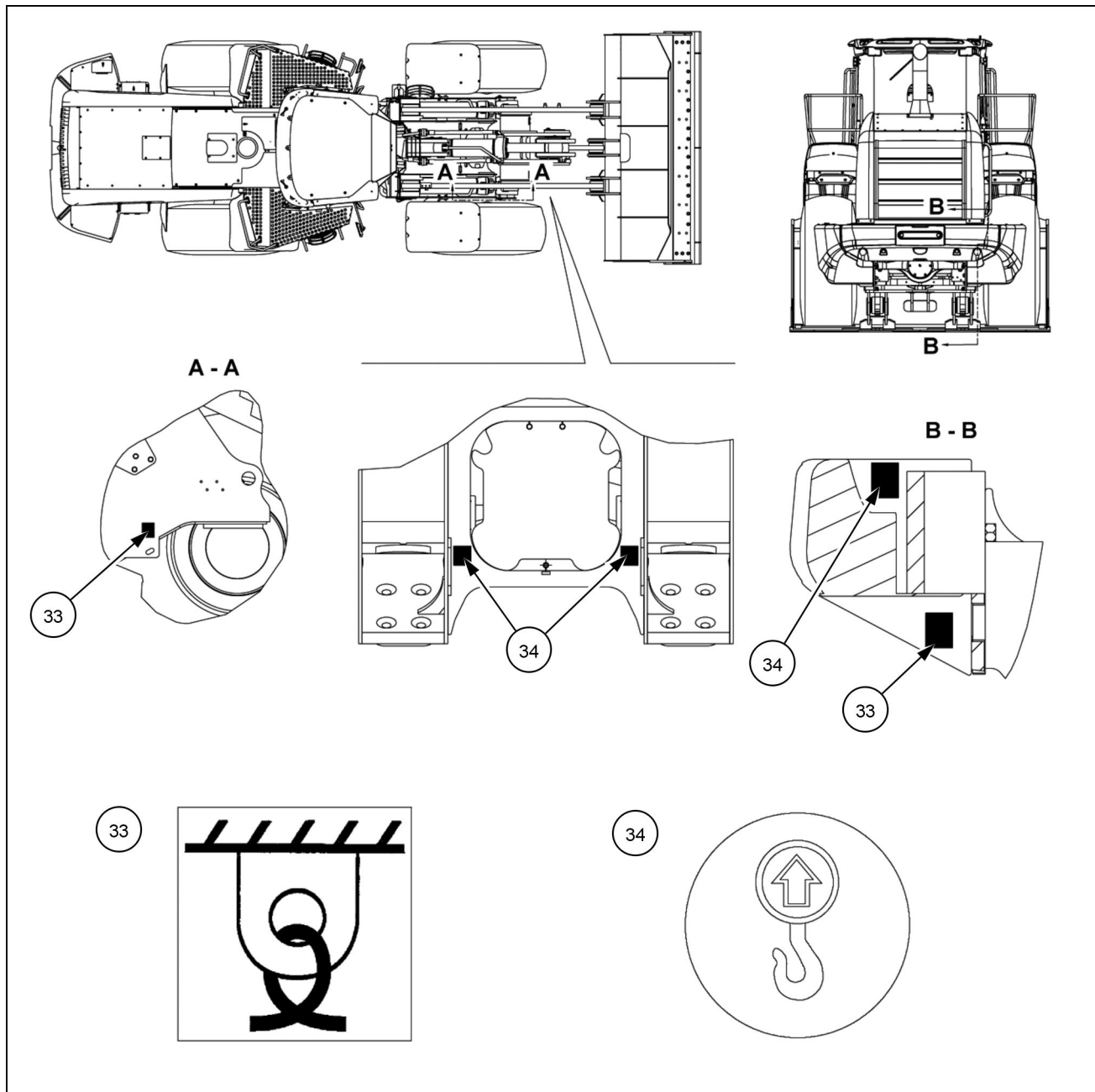
30. Do not step plate.



LEEN11T0045FA 19

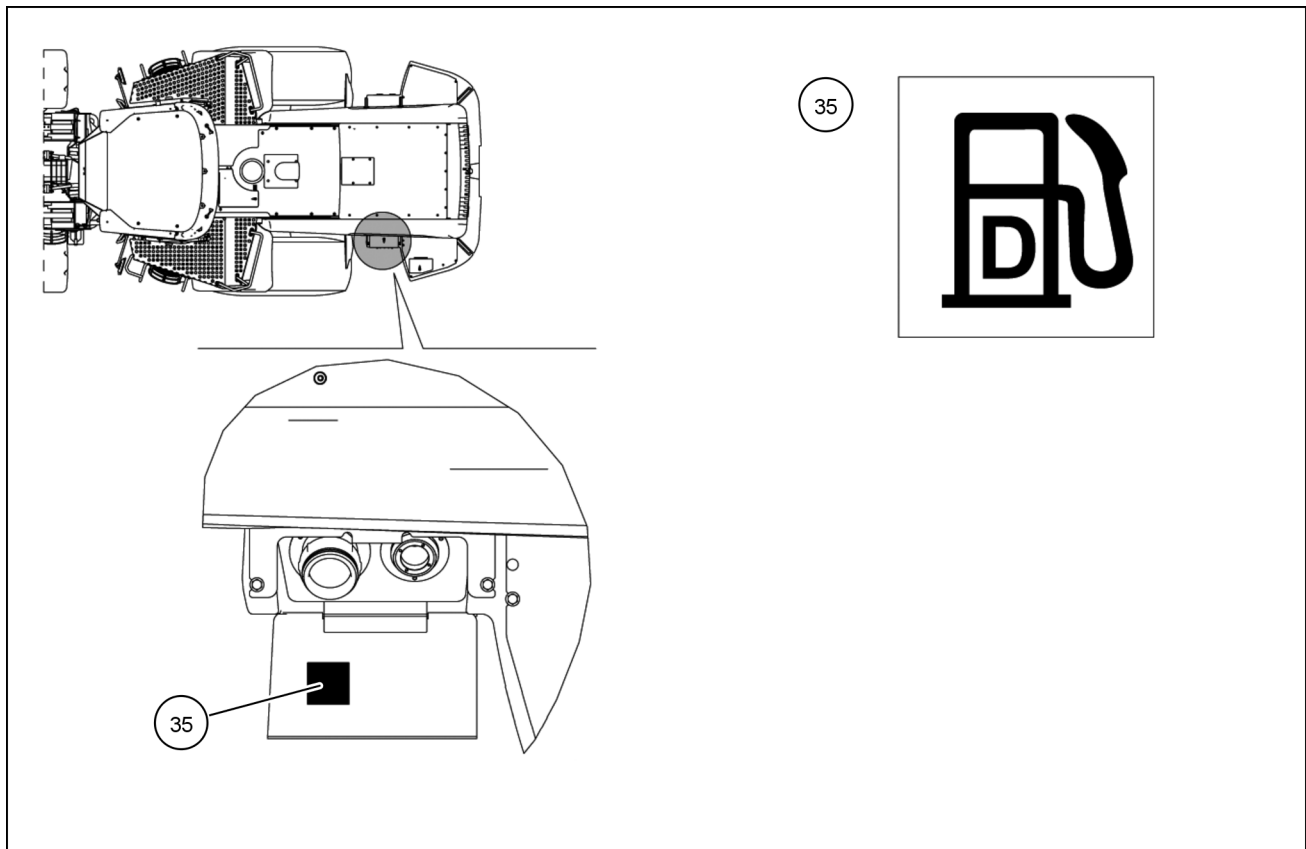
31. Decal Open and Close Hood. Read procedure before open engine hood.

32. Danger - Battery gas can explode. Read procedure before connect jump post battery.



LEEN11T0046GA 20

- 33. Tie down point decal.
- 34. Lifting point decal.



LEIL12WHL0034BA 21

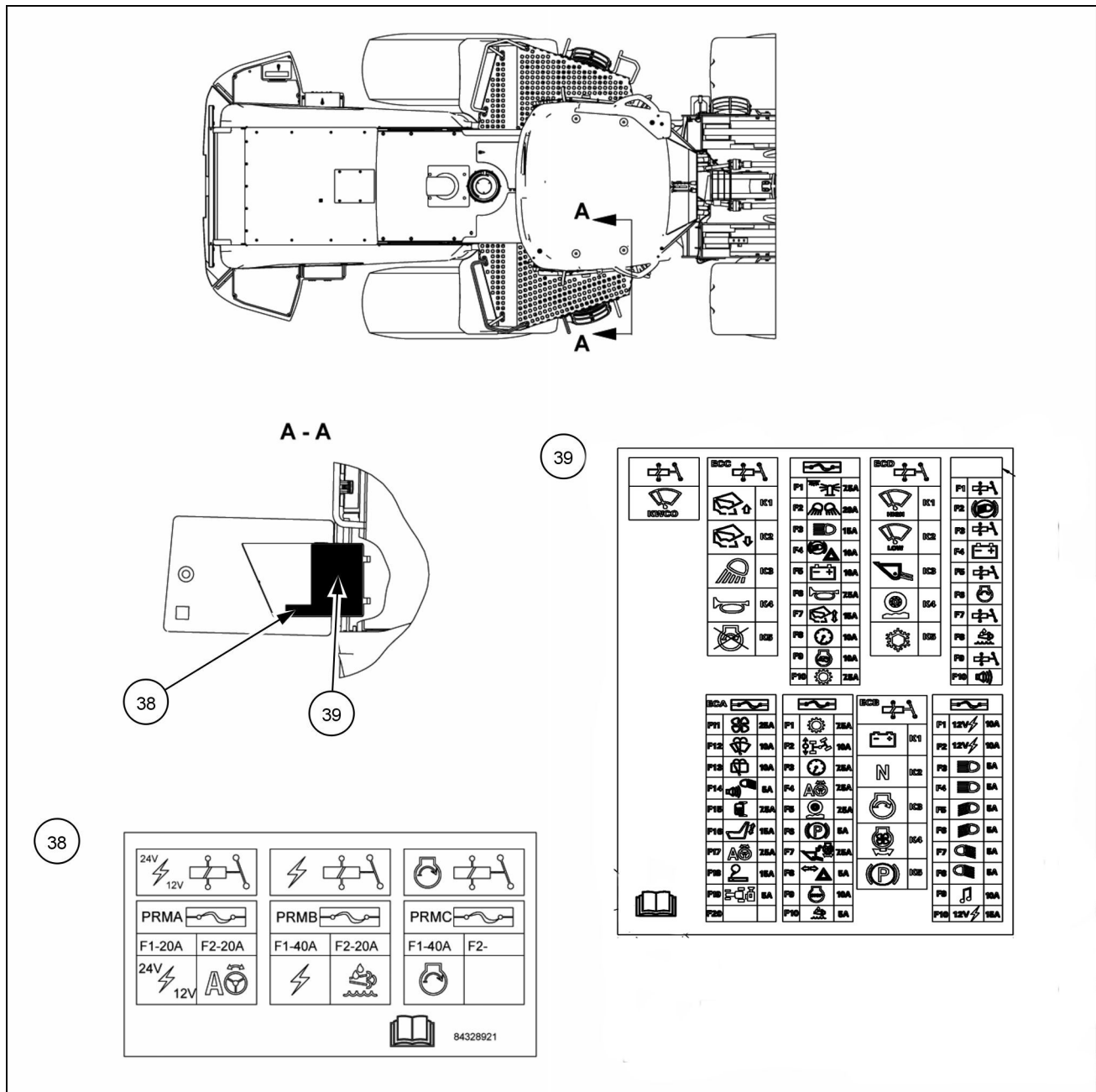
35. The plate indicates point of refill fuel tank. Only use diesel fuel with a sulfur content of less than 10mg/kg according to standard **EN 590** .



LEEN11T0048EA 22

36. Hot surface warning plate.
The engine, engine oil, exhaust pipes, the radiator and coolant can cause burns, when hot. keep in mind this warning when it is necessary to approach or to work near these surfaces. Read carefully the Safety Rules listed at the beginning of this Manual.
37. The data plate specifies that the machine engine is characterized by low exhaust emission levels.

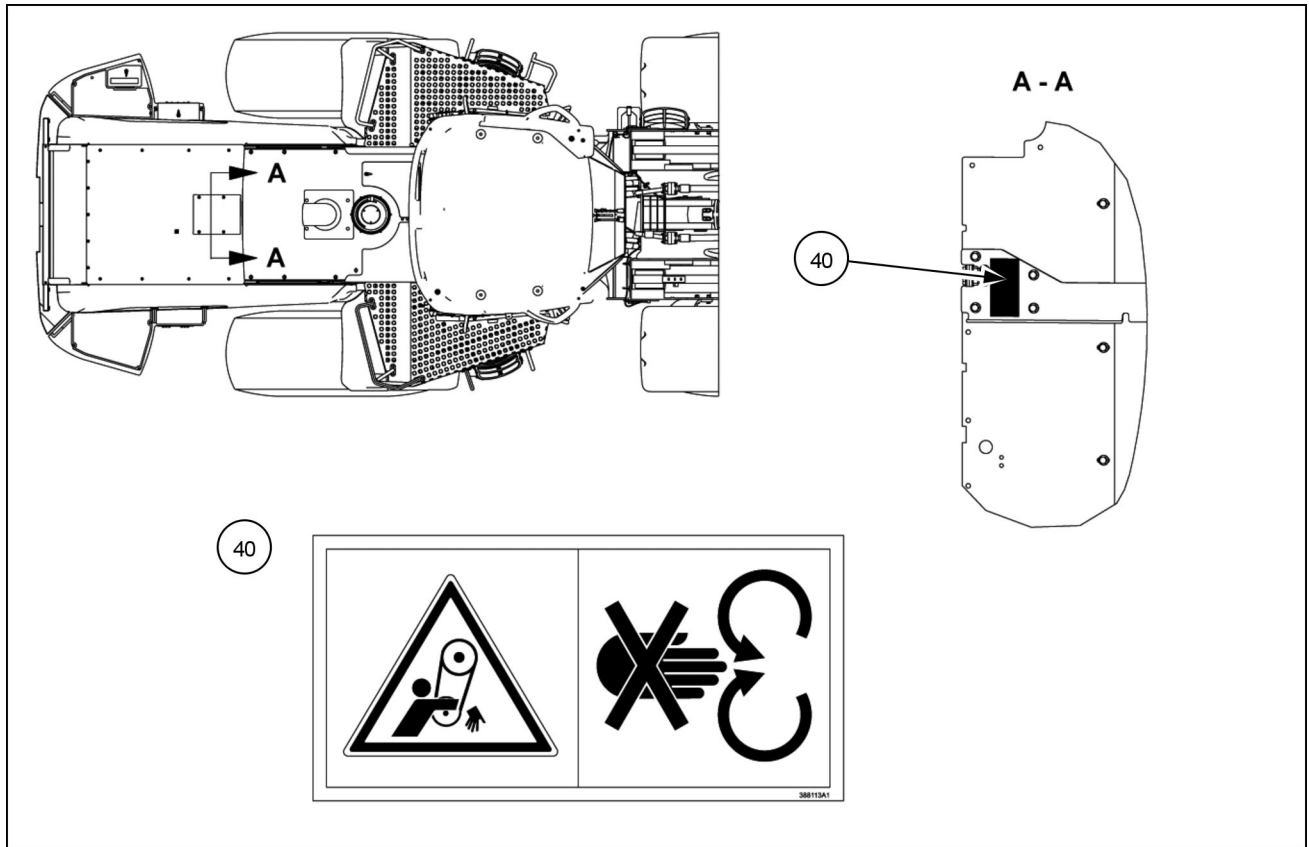
2 - SAFETY INFORMATION



LEEN14T0049GA 23

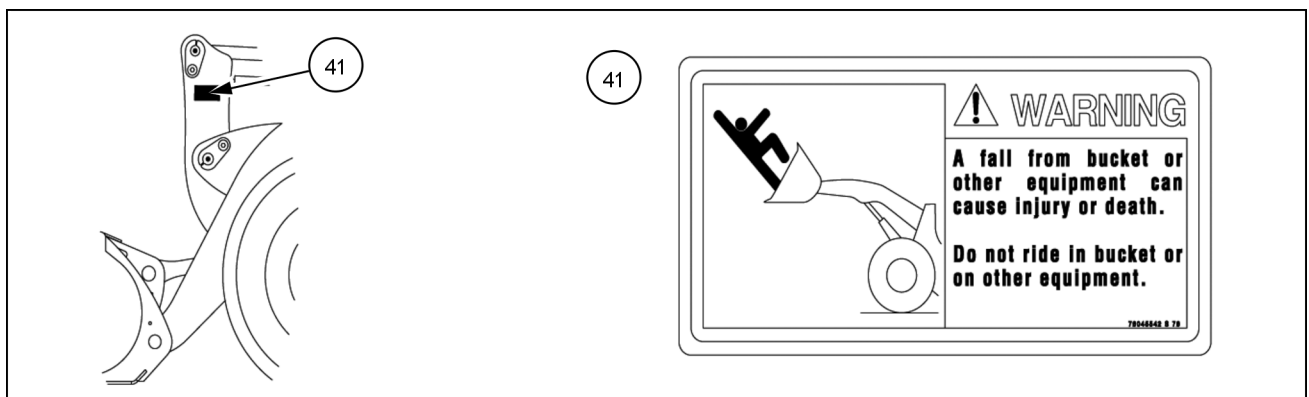
38. Decal fuses.

39. Decal fuses and relays.



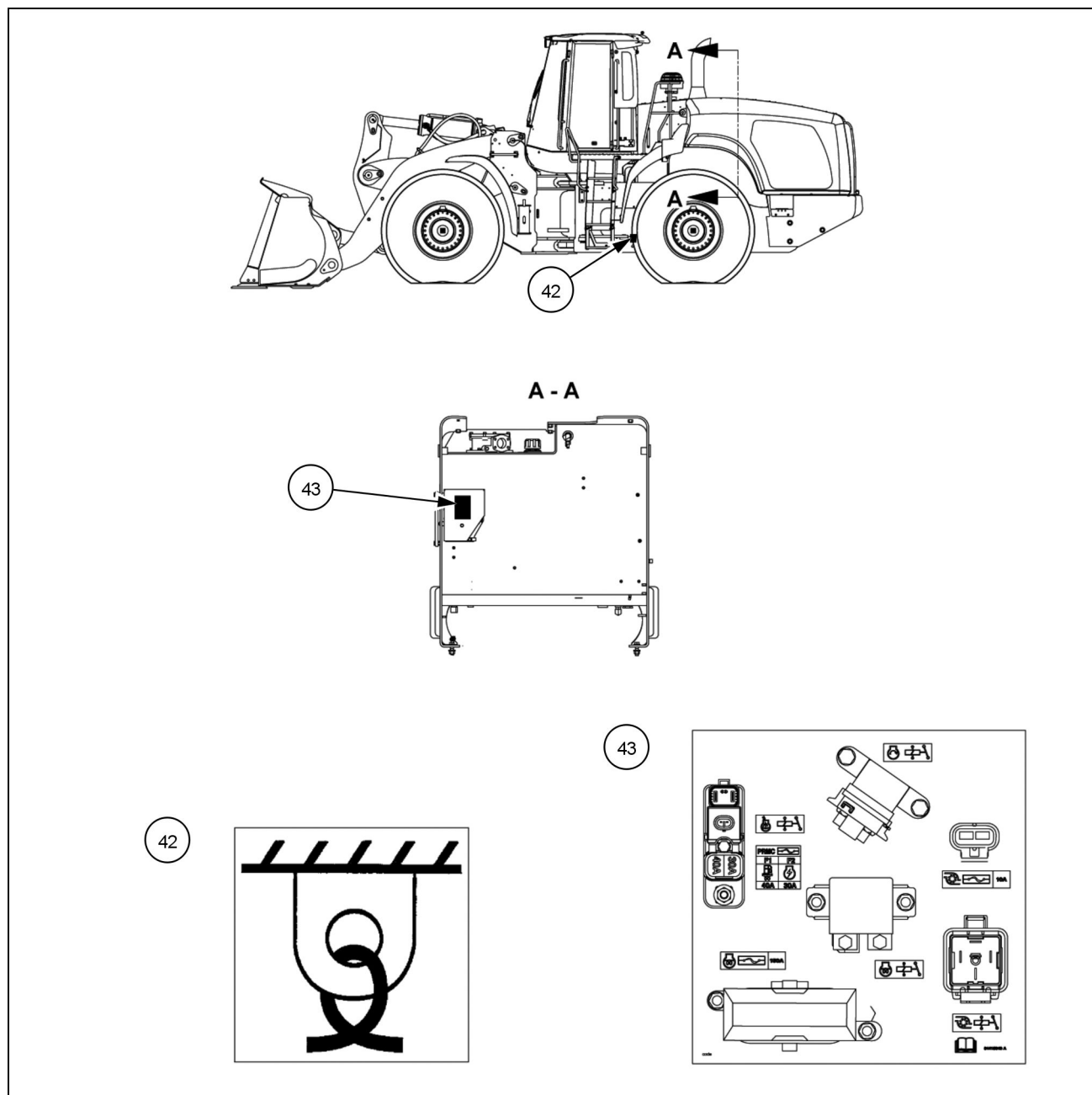
LEEN11T0050FA 24

40. Engine fan and belt warning plate. Do not perform any maintenance with the engine running. Failure to comply could result in serious injury or death.



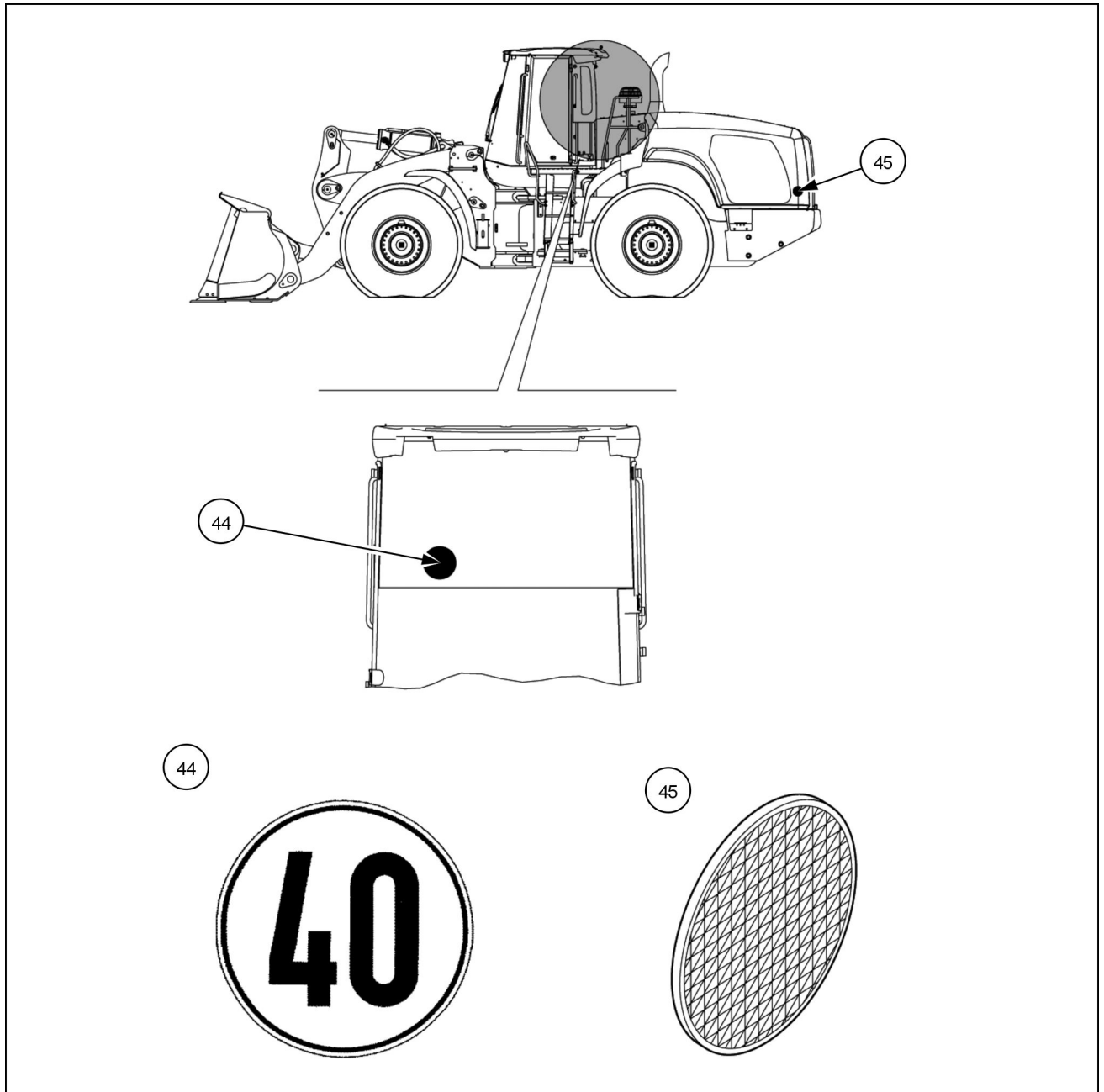
LEEN11T0051EA 25

41. Do not transport passengers. Do not use bucket or implements to lift people. Failure to comply could result in injury or death.



LEEN11T0137GA 26

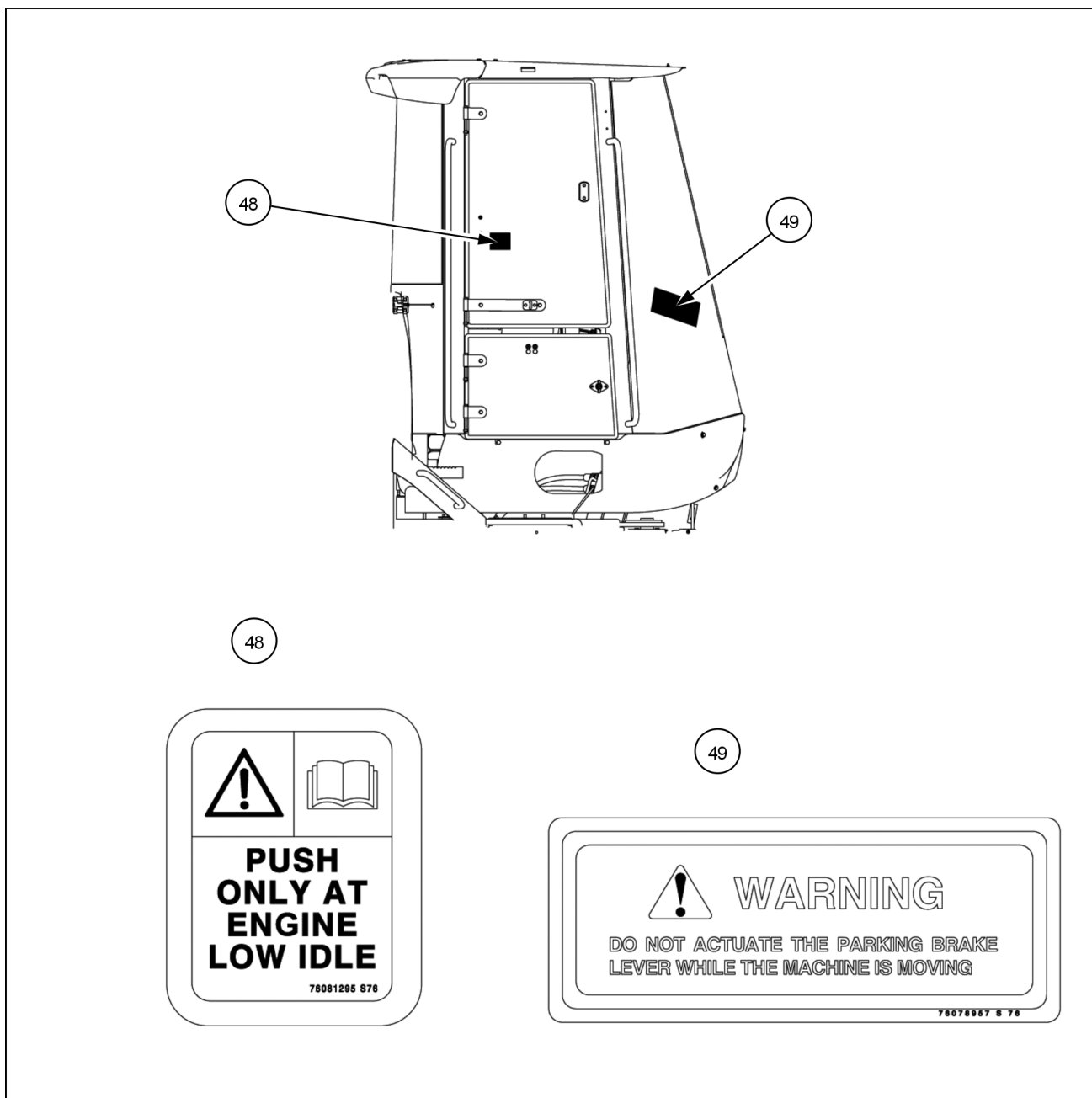
- 42. Tie down point decal.
- 43. Decal fuses and relays.



LEEN11T0138GA 27

44. Decal - Maximum Speed.

45. Reflector.



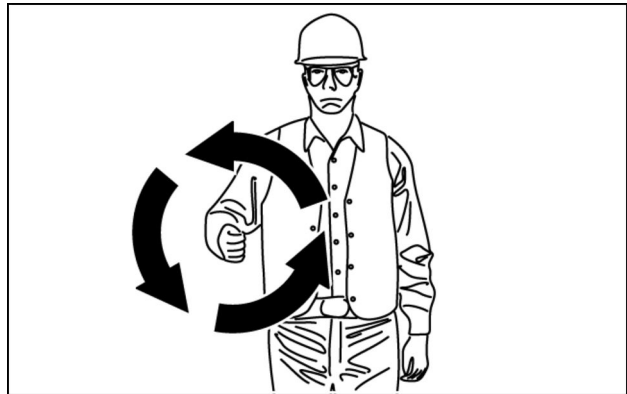
LEEN11T0141GA 30

48. The plate indicates to only operate the fan inversion switch with the engine at idle.
49. Parking brake warning plate.

Hand signals [60622413]

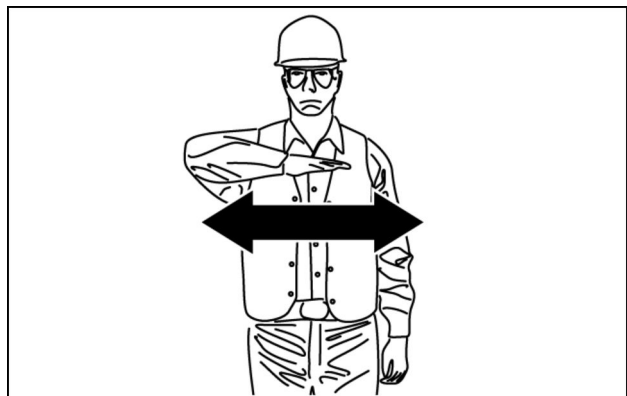
When operating the machine, never attempt to carry out tasks calling for fine control or to work in areas where visibility is poor or impaired without seeking the assistance of a signal person. Make perfectly sure that you and the signal person understand the signals to be used.

Start the engine



LEEN11T0005AA 1

Stop the engine



LEEN11T0006AA 2

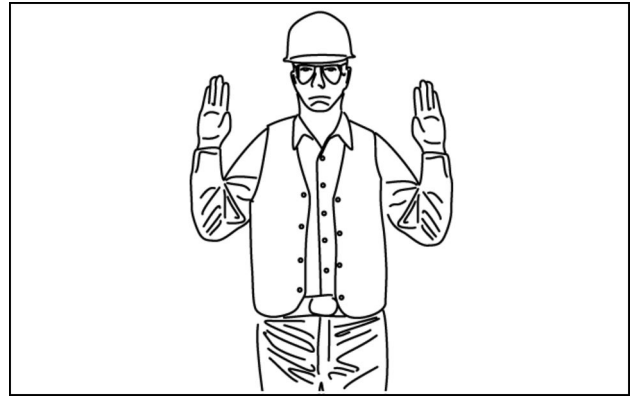
Come to me
Wave hands back and forth (palms inward).



LEEN11T0007AA 3

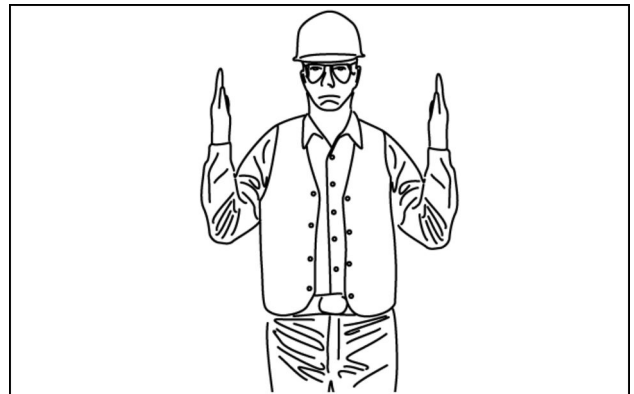
2 - SAFETY INFORMATION

Move away from me
Wave hands back and forth (palms outward).



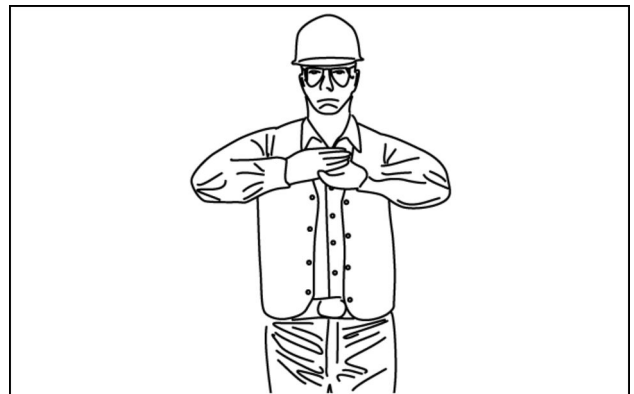
LEEN11T0008AA 4

Go this far



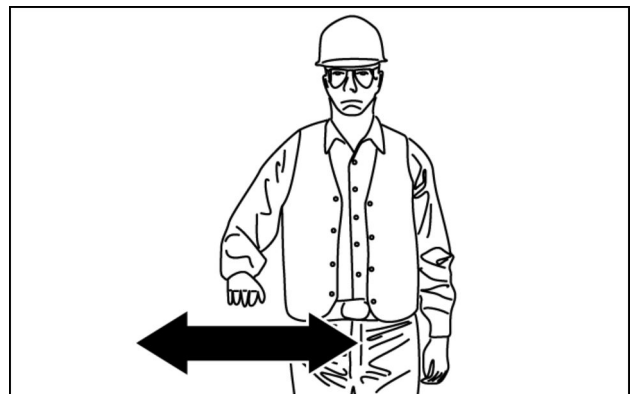
LEEN11T0009AA 5

All stop and hold



LEEN11T0010AA 6

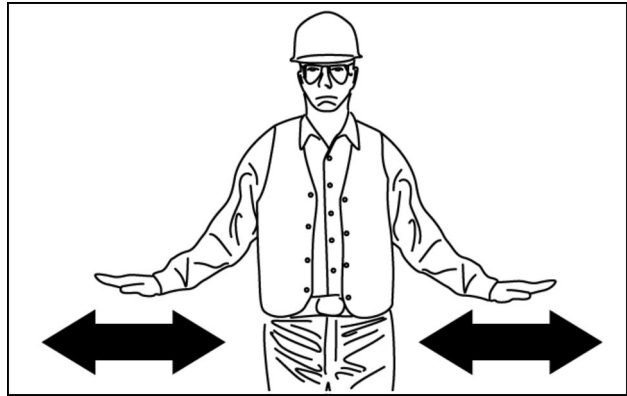
Stop
Move one hand back and forth.



LEEN11T0011AA 7

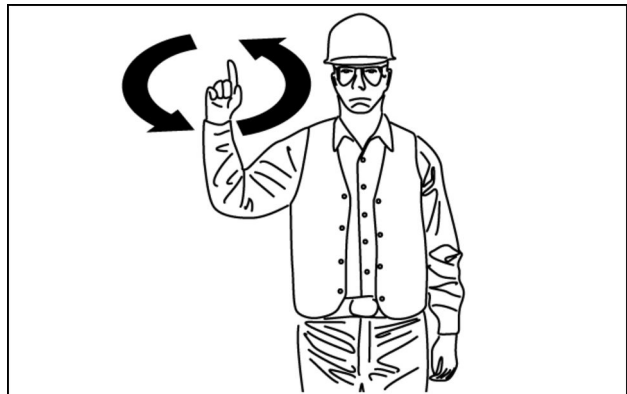
2 - SAFETY INFORMATION

Emergency stop
Move both hands back and forth.



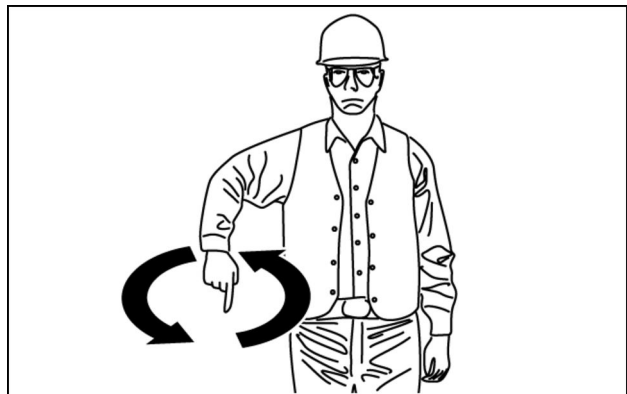
LEEN11T0012AA 8

Raise load or tool



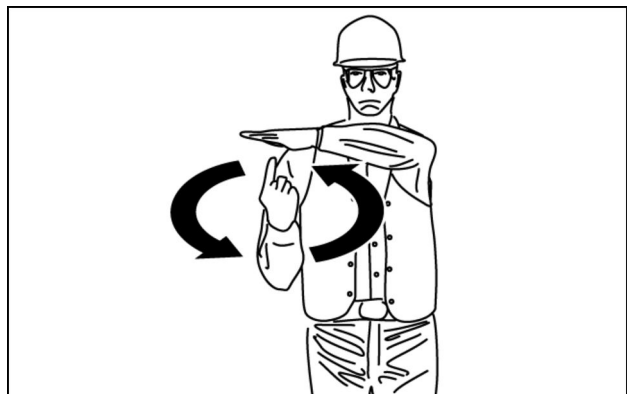
LEEN11T0013AA 9

Lower load or tool



LEEN11T0014AA 10

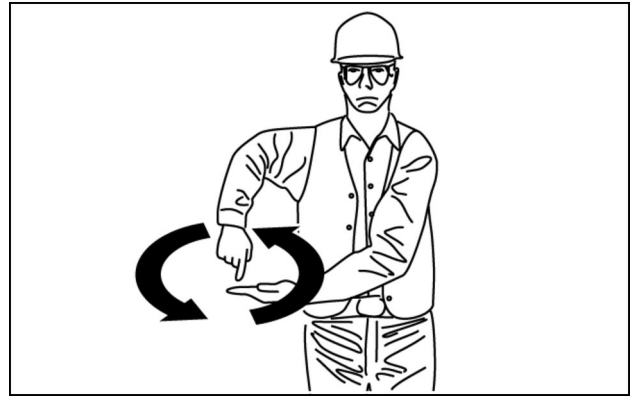
Raise load or tool slowly



LEEN11T0015AA 11

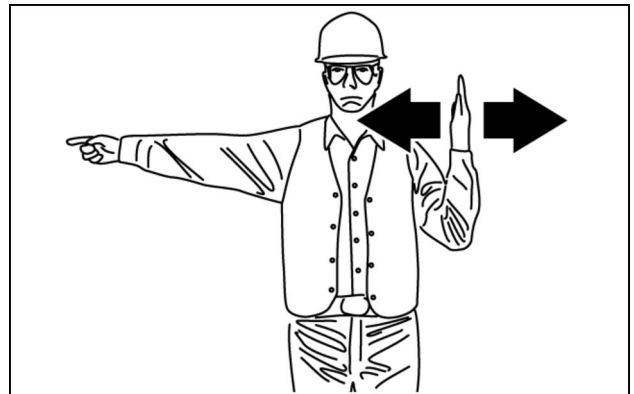
2 - SAFETY INFORMATION

Lower load or tool slowly



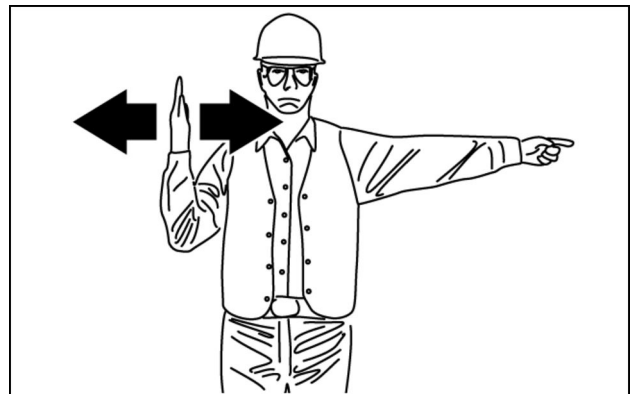
LEEN11T0016AA 12

Turn machine left swing load left
To stop movement, stop moving hand and make a fist.



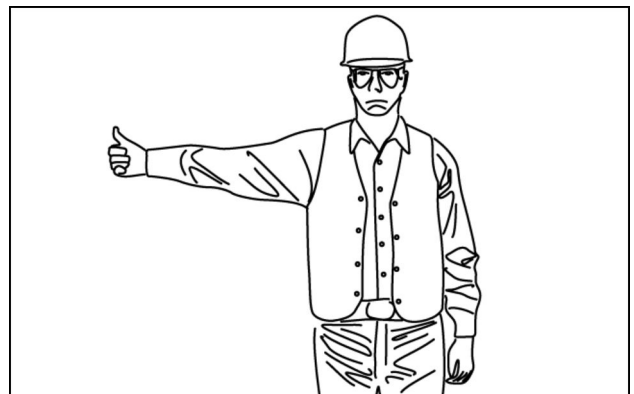
LEEN11T0017AA 13

Turn machine right swing load right
To stop movement, stop moving hand and make a fist



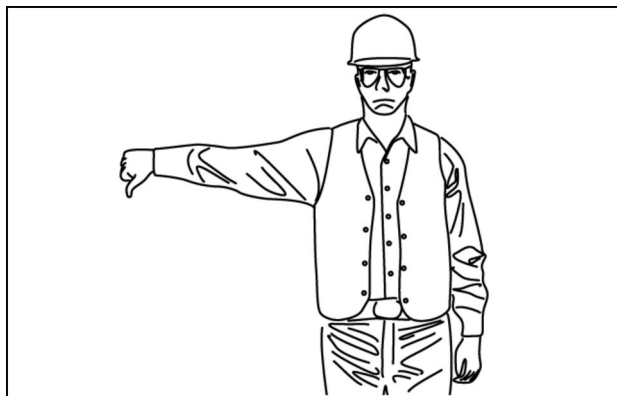
LEEN11T0018AA 14

Raise boom



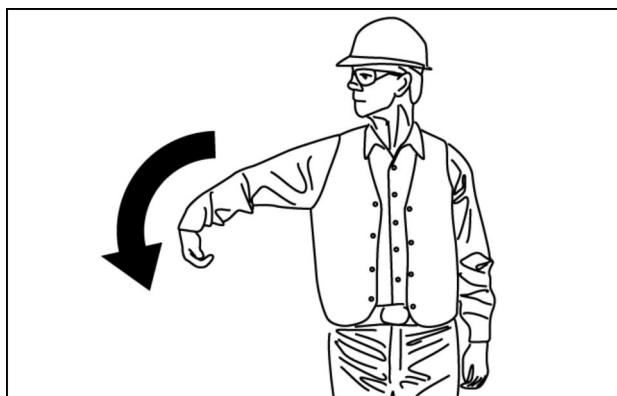
LEEN11T0019AA 15

Lower the boom



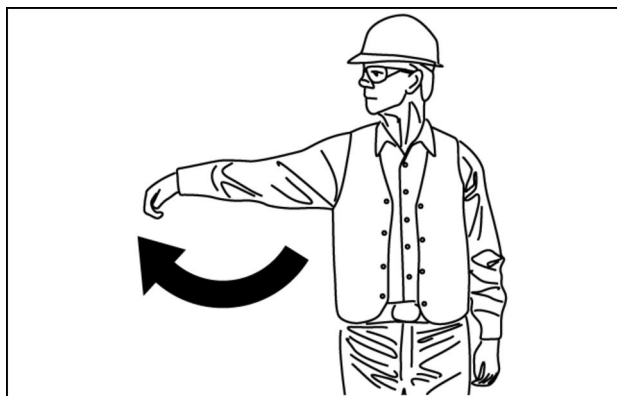
LEEN11T0020AA 16

Retract arm



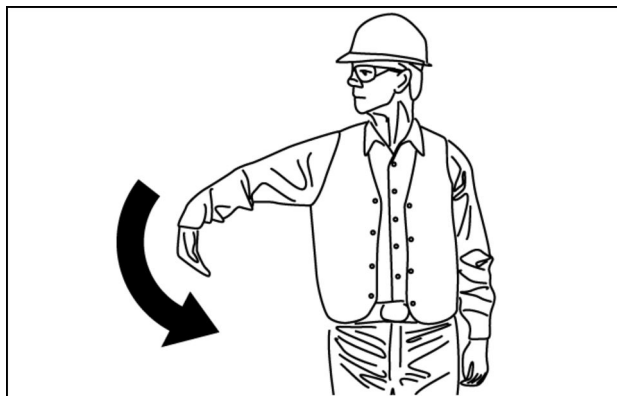
LEEN11T0021AA 17

Extend arm



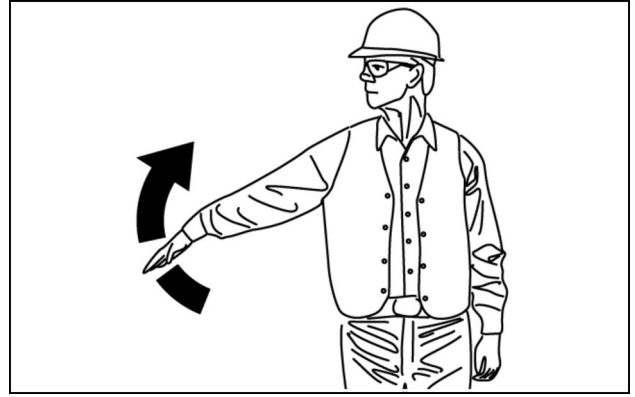
LEEN11T0022AA 18

Fill tool



LEEN11T0023AA 19

Empty tool



LEEN11T0024AA 20

3 - CONTROLS AND INSTRUMENTS

ACCESS TO OPERATOR'S PLATFORM

Proper entry and exit [60626961]

Steps and hand holds

⚠ WARNING

Fall hazard!

Clean the steps and access handles to remove all traces of grease, oil, mud, and ice (in winter).

Failure to comply could result in death or serious injury.

W0139A

ATTENTION: for total safety of use, in case of fire the machine cab has been designed to prevent flame propagation and to limit combustion, pursuant to European standard **ISO 3795**.

When getting down from or getting onto the machine, use the steps and hand holds. Use at least three points of support when getting on and off the machine. The cab door must be locked into the full open or full closed position before using the door hand hold.

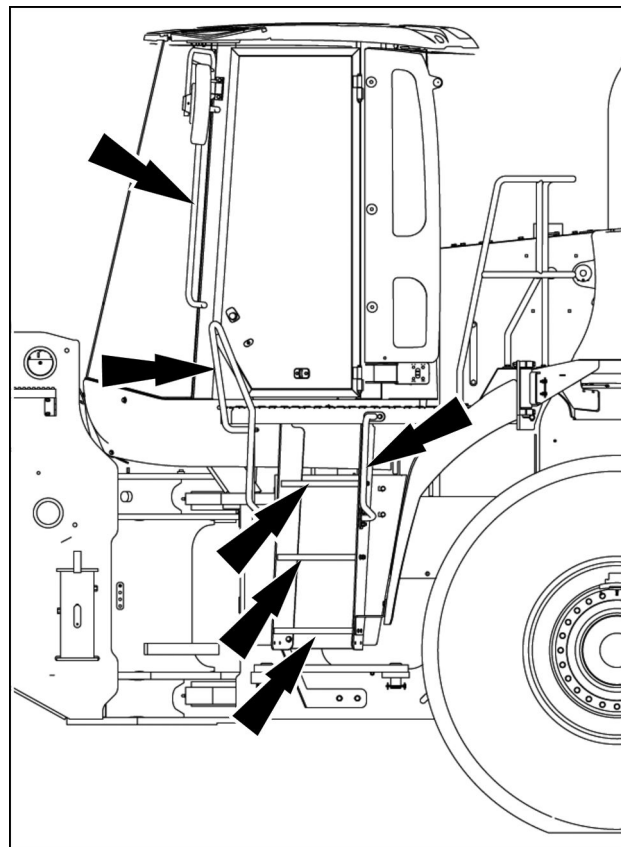
⚠ WARNING

Fall hazard!

Always lock the cab doors in the full open or full closed position before using the handrails on the doors.

Failure to comply could result in death or serious injury.

W0133A



LEEN11T0026BA 1

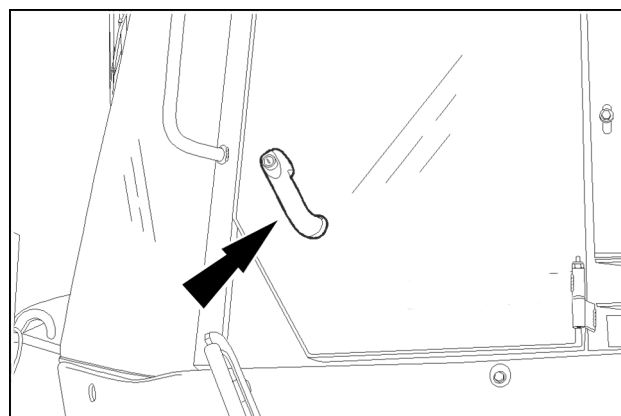
Cab door

Door handle and door lock - Use the key to lock or unlock door from outside the machine. Use the door handle to open the door from the outside.

To lock in place, open the door completely until it latches in place against the cab. To close the door, use the door release knob.

NOTICE: The cab door must be locked into the full open or full closed position before using the door hand hold.

NOTE: The key provided with the machine can be used to lock and unlock the various panels and to activate the engine starter switch functions.

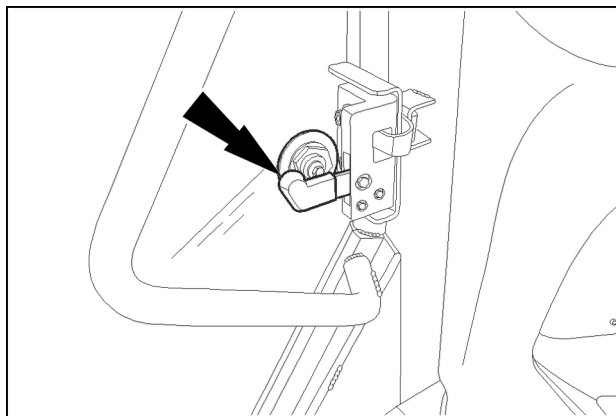


RCPH10WHL190AAH 2

Inside door latch

To secure the door in the open position, push the door back until the door locks on the door catch at the rear of the cab.

Push the latch to open the door from the inside.



RCPH10WHL145BAL 3

OPERATOR'S SEAT

Overview [60627250]

⚠ WARNING

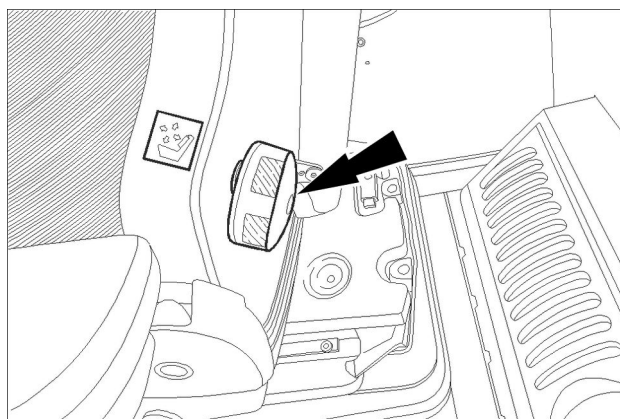
Loss of control hazard!

DO NOT make seat adjustments while the machine is in motion. All seat adjustment should be made with the machine stationary and the parking brake applied.
Failure to comply could result in death or serious injury.

W0293A

Standard operator's seat

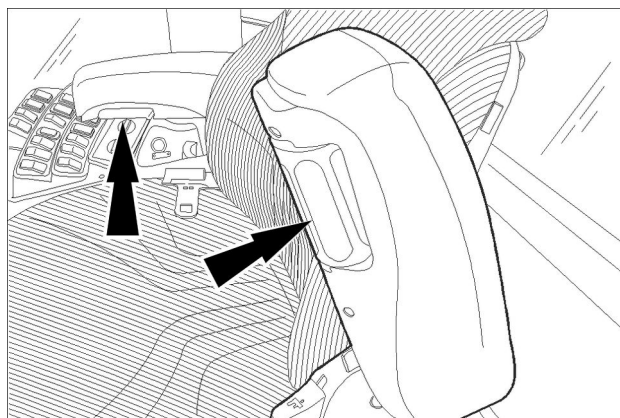
1. Lumbar adjustment knob - Turn the knob clockwise to increase the lumbar support. Turn the knob counter-clockwise to decrease the lumbar support.



RCPH10WHL087BAL 1

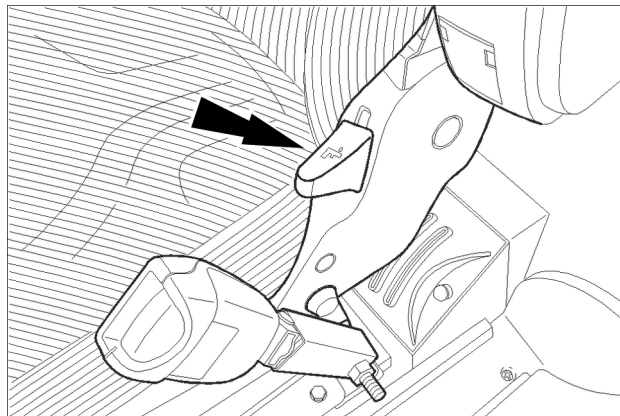
2. Armrest height control adjustment - Turn the knob to raise or lower the armrest to the desired position.

NOTE: Each armrest will pivot to the up position.



RCPH10WHL085BAL 2

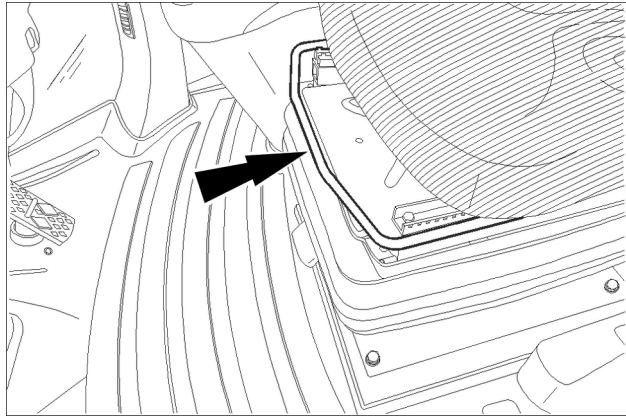
3. Recliner adjustment handle - Lift up on handle, move the backrest to the desired position, release the handle to lock in position.



RCPH10WHL084BAL 3

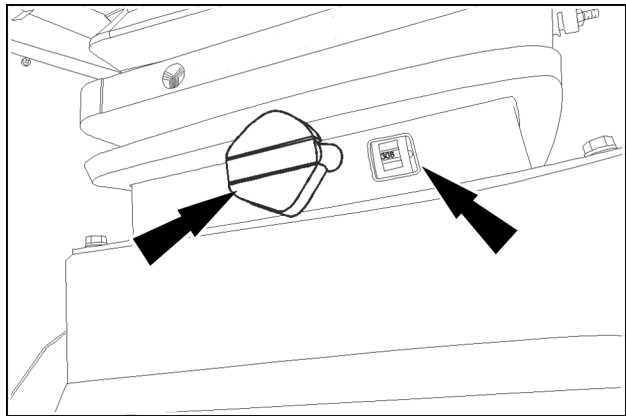
3 - CONTROLS AND INSTRUMENTS

4. Slide adjustment lever - Pull the slide adjustment lever up and adjust the seat forward or backward as required. Release the lever to lock the seat in position. Always make adjustments from the front center of the adjustment bar.



RCPH10WHL088BAL 4

5. Weight adjustment knob - To adjust the seat for your weight, pull the release lever away from the knob. Use the release lever to turn the knob clockwise to increase the weight resistance. Turn the knob counterclockwise to decrease the weight resistance. Adjust the seat to operator preference and comfort.
Weight indicator, standard seat - The weight indicator is located at the bottom front of the seat. Use it to adjust to the operator's weight for a more comfortable ride.
Height adjustment, standard seat - Lift the seat all the way up, drop the seat to the lowest position. Lift the seat to the desired position. The seat will lock into accepted position.

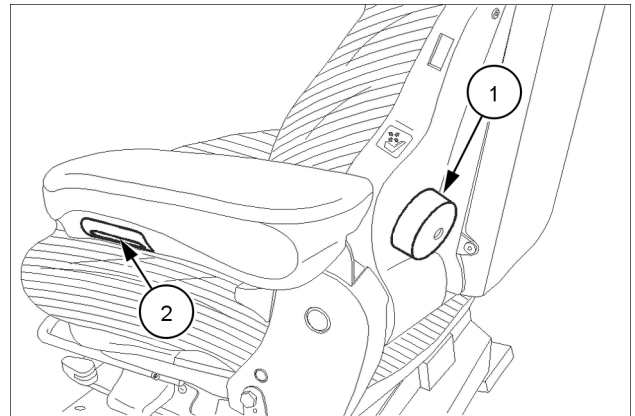


RCPH10WHL506AAH 5

Optional air ride seat

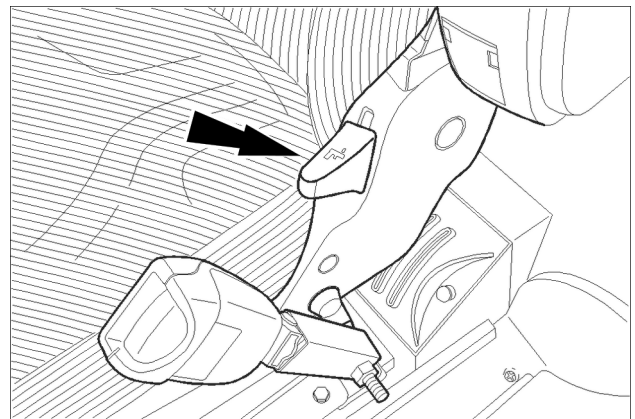
1. Lumbar adjustment knob - Turn the knob clockwise to increase the lumbar support. Turn the knob counter-clockwise to decrease the lumbar support.
2. Armrest height control adjustment - Turn the knob to raise or lower the armrest to the desired position.

NOTE: Each armrest will pivot to the up position.



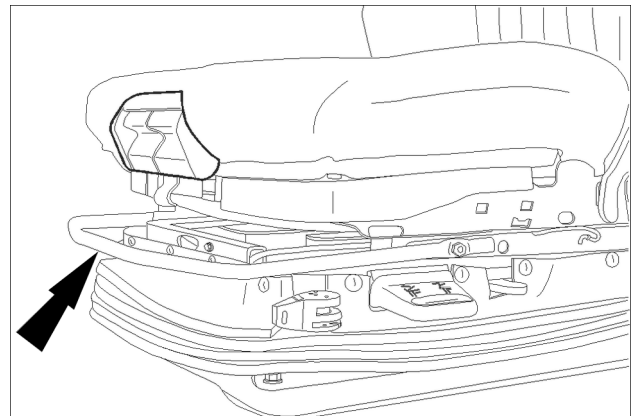
RCPH10WHL091BAL 6

3. Recliner adjustment handle - Lift up on handle, move the backrest to the desired position, release the handle to lock in position.



RCPH10WHL084BAL 7

4. Slide adjustment lever - Pull the slide adjustment lever up and adjust the seat forward or backward as required. Release the lever to lock the seat in position. Always make adjustments from the front center of the adjustment bar.



RCPH10WHL092BAL 8

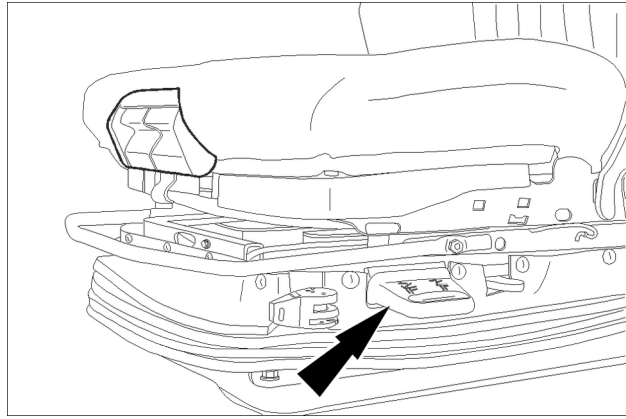
3 - CONTROLS AND INSTRUMENTS

5. Height adjustment handle:

- A. Automatic Adjustment - With the operator sitting in the seat, lift the handle UP until the desired height is reached. Release the weight adjustment tab. Perform a "hop" movement, briefly removing weight from the seat, then regain sitting position and reapply weight. This will reset the height latch.
- B. To lower the seat, push down and hold the weight adjustment tab until the desired height is reached. Release the weight adjustment tab and perform the "hop" movement, briefly removing weight from the seat, then regain sitting position and reapply weight. This will reset the height latch.

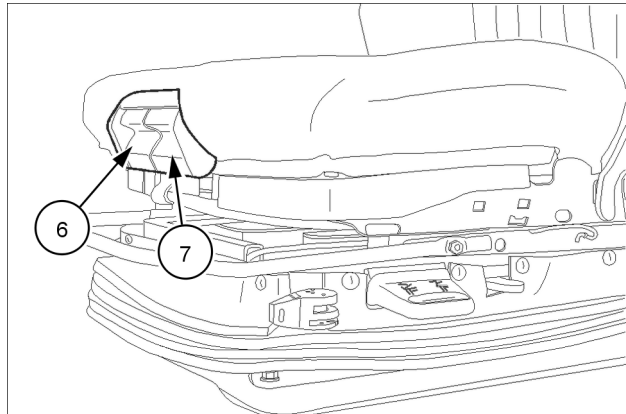
NOTE: If the "hop" movement is not performed, the seat will return to its former latch point.

- C. Manual Adjustment - The seat can be raised or lowered by increasing or decreasing the air pressure in the seat. Lift the handle UP to increase the air pressure. Push the handle DOWN to decrease the air pressure and lower the seat.



RCPH10WHL092BAL 9

6. Seat depth handle - Lift handle up and move the cushion to the desired position. Release the handle to lock the cushion in place.
7. Seat cushion angle adjustment handle- Lift up on the handle. Move the seat to the desired angle. Release the handle to lock the cushion angle. Weight indicator, standard seat - The weight indicator is located at the bottom of the seat. Use it to adjust to the operator's weight for a more comfortable ride.



RCPH10WHL092BAL 10

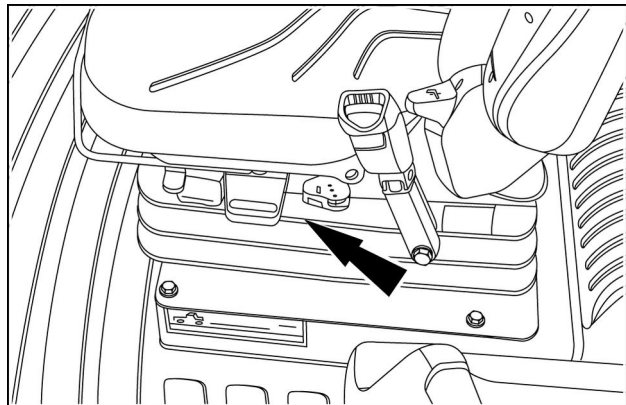
8. Ride cushion adjustment lever - The seat suspension can be adjusted to various operating conditions in order to gain the most comfortable ride for the operator.

The cushion adjustment lever has four positions from soft to hard in order to allow for maximum comfort over varying or rough terrain.

The first adjustment is with the small end of the adjustment lever pointing toward the front of the seat, as shown. The other three adjustments can be obtained by rotating the small end of the adjustment lever out away from the seat. Each of the adjustments has a slight detent.

Weight Adjustment: Lift or press handle until the green marking at the weight/height indicator is visible.

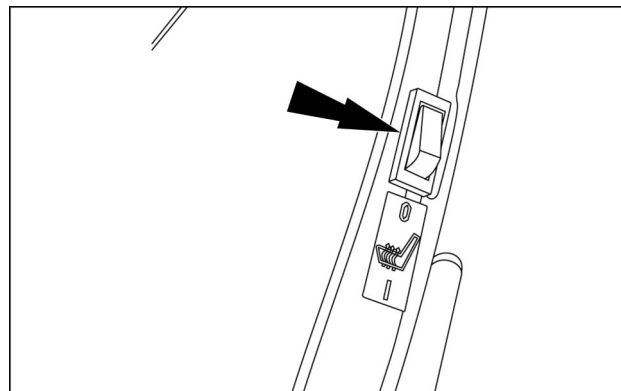
Height Adjustment: Lift or press handle until the required position is adjusted (The green marking is visible on the indicator at the bottom front of the seat).



RCPH10WHL424AAH 11

Heated seat

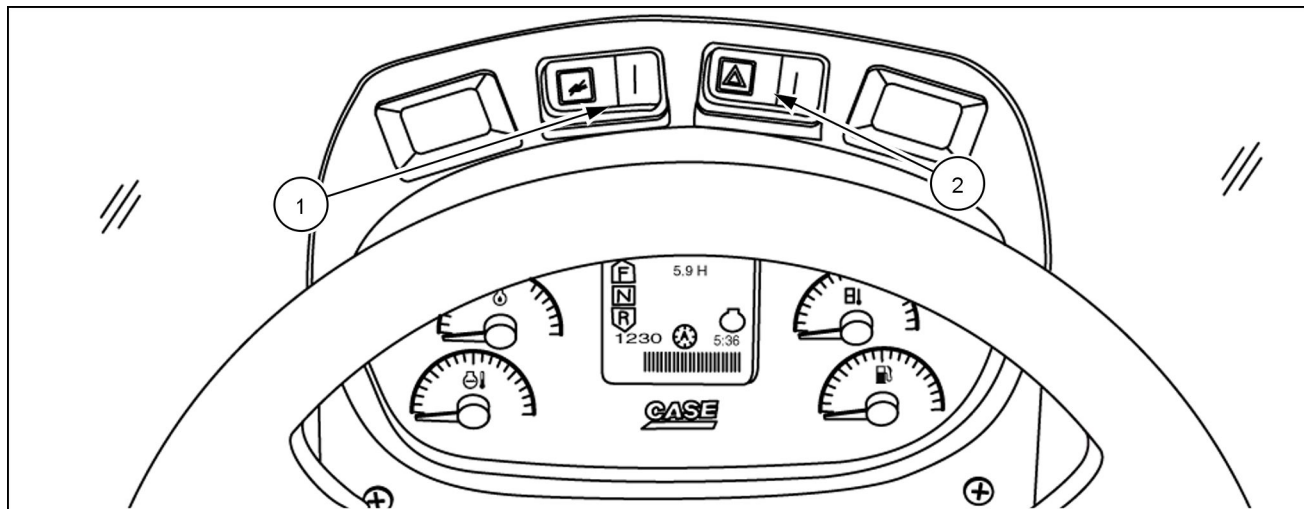
Switch controls for the optional heated seat are located along the left side of the backrest. The rocker switch has on/off positions. Use the switch for cold weather comfort.



RCPH10WHL074AAH 12

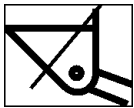
FORWARD CONTROLS

Front console [60628106]



RCPH10WHL190FAH 1

1. Pilot control switch



Push on the left hand side of the pilot control switch to disable the pilot controls, the pilot control lamp will illuminate when the hydraulic control levers are disabled. The loader linkage will stay in position when the pilot controls are disabled. Push on the right hand side of the switch to actuate the pilot controls. The hydraulic control levers will now function.

2. Four-way flasher



Push the left hand side of the flasher switch to actuate the flashers. Push the right hand side of the flasher switch for the OFF position.

Steering column [60628341]

Ignition switch

The ignition switch has four positions:

Accessory position

This position will energize the optional radio only. It will not energize the instruments or start the engine.

OFF position

In this position, all switch controlled current is OFF. Turn the key to OFF to stop the engine. Remove the key and turn the Master Disconnect Switch to OFF.

START position

Turn the key to this position to engage the starter motor to start the engine. The switch is spring loaded and will return to the ON position when released.

ON position

This position will energize all electrical systems. The key will return to this position after you release the key from the start position.

Horn and turn signal

⚠ WARNING

Hazard to bystanders!

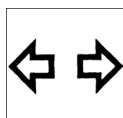
Always sound the horn before starting the machine. Make sure the work area is clear of other persons, domestic animals, tools, etc. before you operate the machine. Never allow anyone in the work area during machine operation.

Failure to comply could result in death or serious injury.

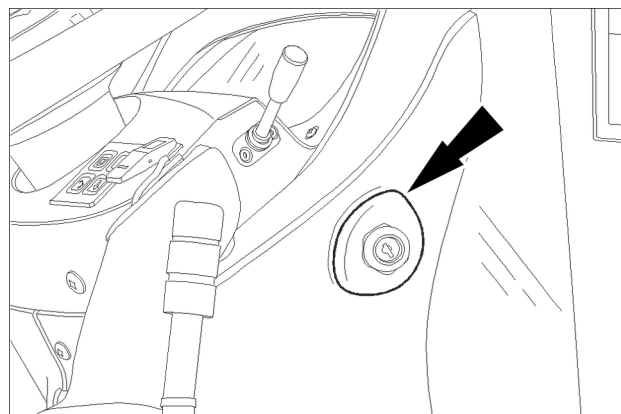
W0304A



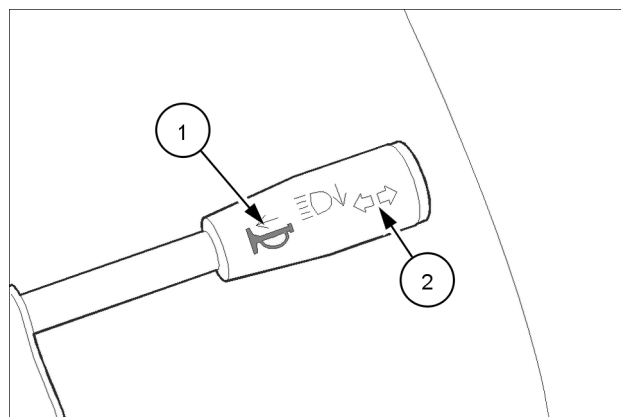
1. Horn - Push the horn lever in to actuate the horn.



2. Turn signal lever - Push the control lever up to signal a left turn. Pull the lever down to signal a right turn. The lever must be moved manually to the center position to stop the signals.



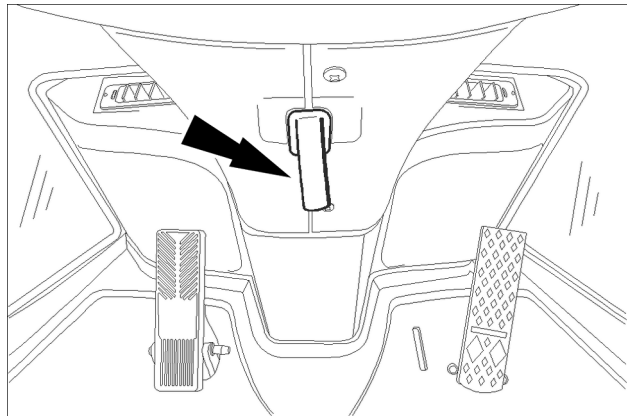
RCPH10WHL114BAL 1



RCPH10WHL115BAL 2

Steering wheel tilt control

The steering wheel tilt control allows the steering wheel to be adjusted to multiple positions. Pull the handle up, and adjust the steering wheel to the correct and most comfortable angle. Release the control to hold in that position. Tilt the steering wheel completely up when leaving the machine. Always adjust the steering wheel to the correct position before starting the engine.



RCPH10WHL117BAL 3

Pedal controls [60628571]

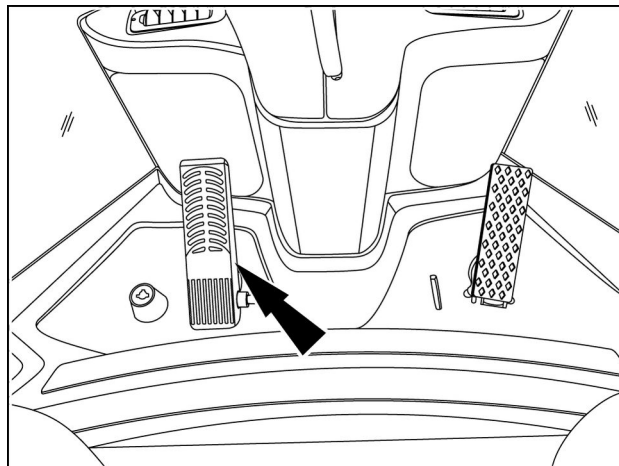
Brake pedal

The brake pedal will actuate the machine brakes when pushed.

NOTE: The pedal will work in conjunction with the transmission declutch switch or **POWERINCH** for more efficient braking. See *Declutch Switch in Operating Instructions- Chapter 4* for further information.

NOTICE: On steep slopes using the down shift mode of the transmission is recommended to aid braking and to help prevent brake overheating and premature disc wear.

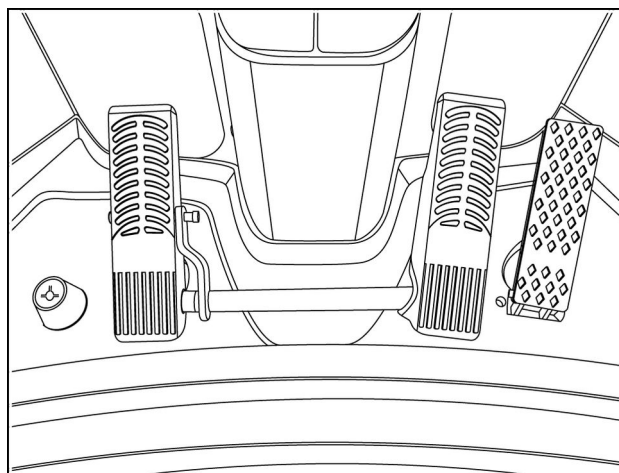
NOTE: When the machine is shut off, the parking brake is automatically set.



RCPH10WHL435AAH 1

Right side brake pedal (optional)

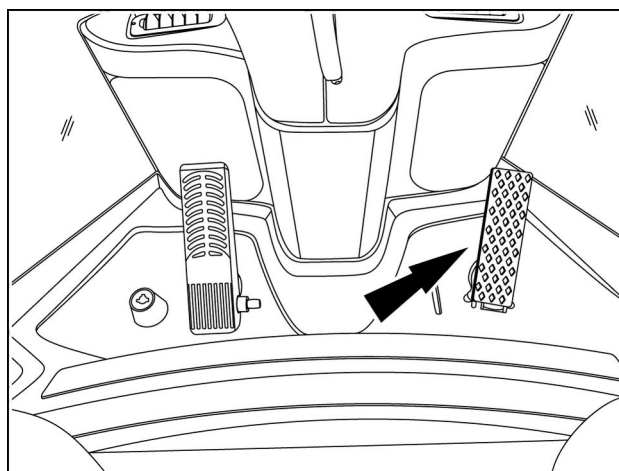
An additional right brake pedal can be added, allowing both the left and right pedal to be locked together. Braking can be performed from either pedal.



RCPH10WHL492AAH 2

Foot Throttle

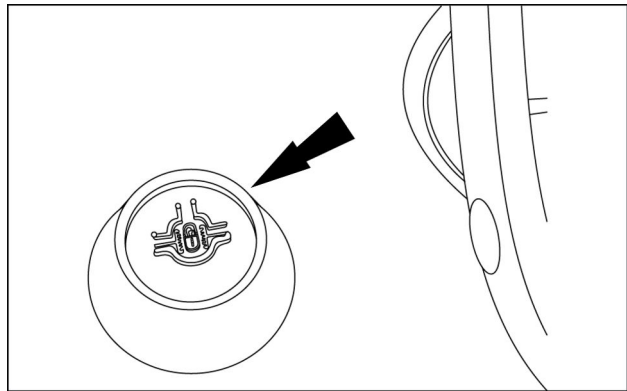
Push the foot throttle to increase engine speed. When the pedal is released the engine runs at low idle.



RCPH10WHL435AAH 3

Differential lock (optional)

Depress the differential lock foot switch to lock the front axle differential. Release switch to unlock the differential.



RCPH10WHL075AAH 4

Parking brake [60628925]

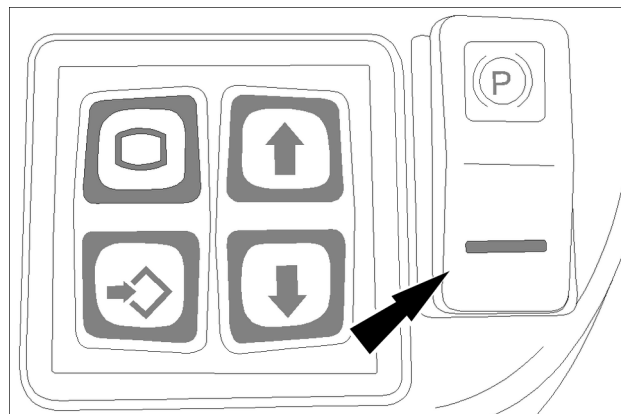
Parking brake switch



Make sure the machine has come to a complete stop before applying the parking brake.

The parking brake button engages the parking brake on the transmission output shaft.

NOTICE: The parking brake is a spring applied, hydraulic released brake which is applied to the drive shaft. It will effectively hold the machine in place when used correctly.



RCPH10WHL005BAL 1

Engaging the parking brake

To engage the parking brake, move the gearshift lever to neutral ("N"), stop the machine and engage the brake by pushing down on the top of the switch. The parking brake will automatically engage when the machine is shut off.

NOTICE: A failure in the operating procedure or a failure in the electrical or hydraulic function can result in abrupt engagement of the parking brake. Always wear your seat belt.

Parking brake release

NOTE: The service brake must be at operating pressure before the parking brake can be released to move the machine. The brake pressure indicator lamp must not be illuminated when disengaging the parking brake. Attempting to move the machine prior to the service brake pressures being sufficient causing low operating pressure can result in premature parking brake pad wear.

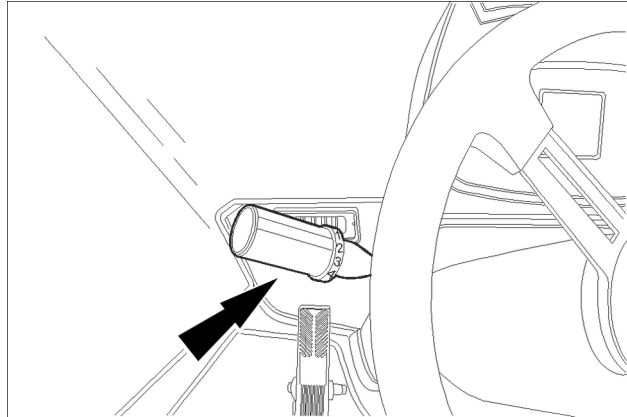
LEFT-HAND SIDE CONTROLS

Transmission controls [60629493]

Transmission control lever

The transmission control lever is used to shift the transmission gears from first through fourth gear. Turn the transmission control lever away from you to select a higher gear. Turn the lever toward you to select a lower gear. This control lever is also used to put the transmission in FORWARD, NEUTRAL, and REVERSE (F-N-R).

- A. Move the control lever away from you for FORWARD.
- B. The center position of the control lever is NEUTRAL.
- C. Move the control lever toward you for REVERSE.



RCPH10WHL116BAL 1

Using the steering column transmission lever

All the following steps are required in order to use the steering column transmission lever:

1. Service brake pressure must be at operating pressure.
2. Transmission control lever must be in neutral.
3. Push down on the bottom of the parking brake switch to release the parking brake switch.

NOTE: If the parking brake was NOT set when the machine was turned OFF, the parking brake switch must be cycled at step 3.

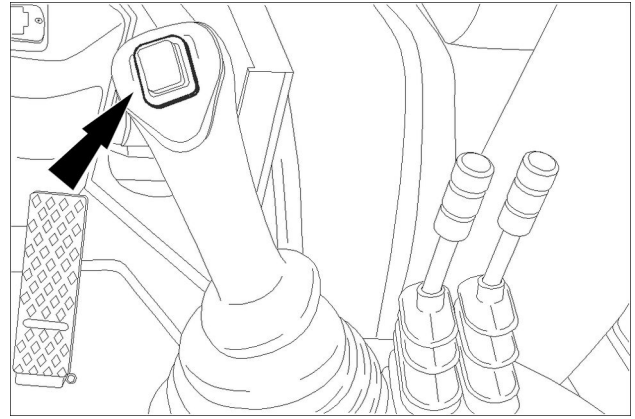
4. Place the transmission control lever in either FORWARD or REVERSE to move the machine.

Hydraulic control transmission Forward-Neutral-Reverse (FNR) operation

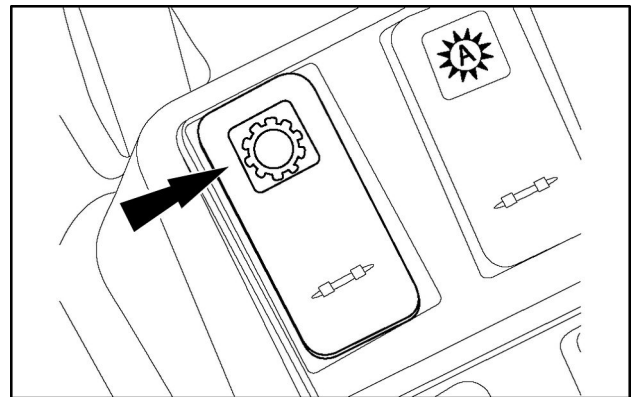
The F-N-R function of the transmission control lever may be moved to the loader control lever for operating efficiency.

All the following steps are required to use the control lever transmission shift functions:

1. Service brake pressure must be at operating temperature.
2. Left side F-N-R of transmission control lever must be in neutral.
3. Right side F-N-R switch must be in neutral.
4. Machine speed must be zero.
5. Engine must be running.
6. Push down on the top of the transmission enable switch located on the side console. The indicator light on the bottom of the enable switch will illuminate when activated.
7. Push down on the bottom of the parking brake switch to release the parking brake. This must occur within 8 seconds of enable. (If the parking brake was NOT set when the machine was turned off, the parking brake switch must be cycled at this step).
8. Place the right side F-N-R switch in either Forward or Reverse to move the machine. This must occur within 8 seconds of enable.



RCPH10WHL109BAL 2



RCIL10WHL177BAL 3

Joystick steering [60629623]

⚠ WARNING

Driving hazard!

If the hydraulic pilots are disengaged, the joystick steering remains active. Always disengage the joystick steering when not in use.

Failure to comply could result in death or serious injury.

W0449A

⚠ WARNING

Driving hazard!

For optimum control, always use the primary steering wheel when operating at higher machine speeds. Do not use the joystick steering control when operating at speeds above 20 km/h (12.4 mph).

Failure to comply could result in death or serious injury.

W0450A

⚠ WARNING

Driving hazard!

Always use the primary steering when traveling on a public road or highway. The left armrest must be raised and in a locked position during travel. Do not use joystick steering when traveling on a public road or highway.

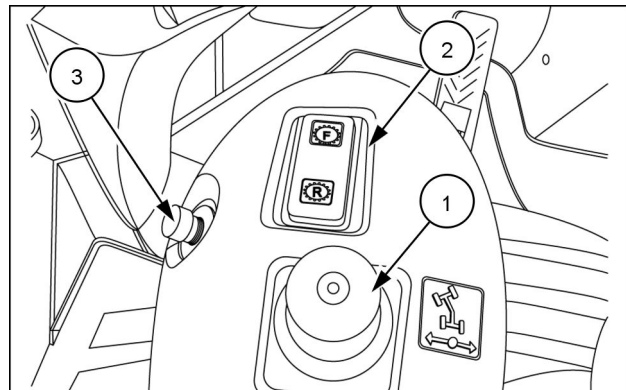
Failure to comply could result in death or serious injury.

W0451A

Joystick steering control lever (optional)

The joystick steering control lever and the Forward, Neutral, Reverse (FNR) switch allow the loader to be operated using hand controls located on the left operator seat armrest. It allows for steering movement at the operator's fingertips.

Use these controls in short cycle, repetitive, high production load and carry operations to reduce operator fatigue and increase operating efficiency. The system is set up so that the steering wheel is always usable (always has priority) and the joystick steering is disabled if the steering wheel is used. It may be possible that the steering wheel could be turned extremely slowly and not deactivate the joystick steering, but for all practical operations the joystick steering system is deactivated when the steering wheel is used. The arm rest has a built-in F-N-R switch and a push button kick-down switch.



RCIL10WHL188BAL 1

1. Joystick steering lever
2. F-N-R (forward-neutral-reverse)
3. Kick down switch

Forward, Neutral, Reverse (F-N-R) switch

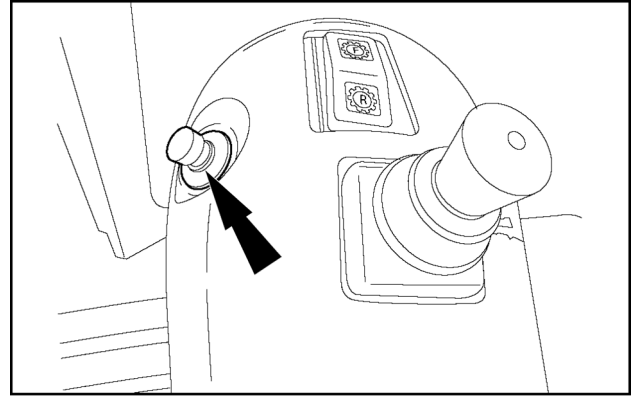
This switch will allow the operator to put the transmission in Forward, Neutral, or Reverse. To activate this auxiliary F-N-R switch, the proper sequence must be followed. The primary shift lever must be in the Neutral position before activating joystick steering. Push the switch forward to place the transmission in Forward, place the switch in the middle position to place the transmission in Neutral, and push the switch rearward to put the transmission in Reverse.

See Operating Instructions chapter for further information.

Kick-down switch

The kick down switch is used to shift down through the gears in single steps. Each time the switch is pressed, the transmission will shift down one gear range until first gear is reached. Once the kick down switch has been pressed down, the transmission maximum gear allowed is lowered. It will return to the automatic mode when (1) the transmission control lever gear changes, or (2) the transmission control lever is moved to NEUTRAL and then to FORWARD or to REVERSE.

When the Automatic Mode has been chosen by the operator, the Automatic Mode indicator will be shown in the multi-function display.



RCIL10WHL189BAL 2

⚠ WARNING

Driving hazard!

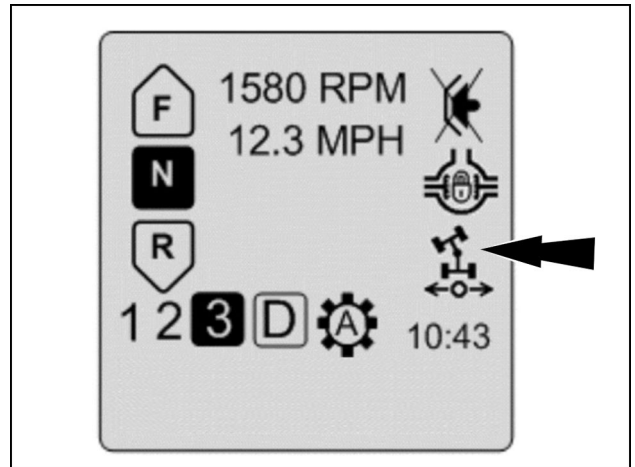
Check all controls and safety devices in a safe, open area before starting work.

Failure to comply could result in death or serious injury.

W0248A

Joy stick steering enabled (optional)

When joy stick steering has been enabled, joy stick steering will be indicated on the Liquid Crystal Display (LCD) screen. Use joy stick steering for repetitive, high production operations such as truck loading, etc. Joy stick steering is not intended for primary steering use.



LEIL12WHL0035BA 3

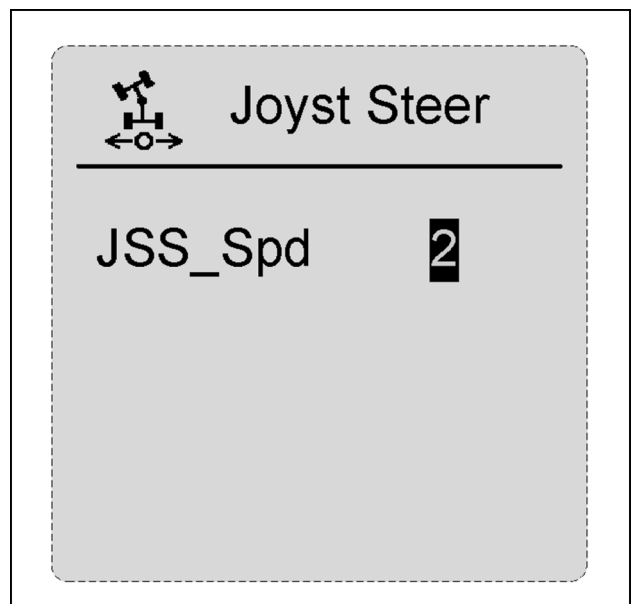
Joy stick steering speed select (optional)

To select the speed most suitable for the operation being performed when using joystick steering, highlight the Joystick Speed Select at the settings screen and press the enter key. At the joystick steering screen, choose the speed from a one to three range using the arrow keys. After the desired speed has been selected, press the enter key again to lock in the speed selection.

The higher the range selected, the more responsive steering capabilities of the machine become.

NOTICE: When first becoming accustomed to joystick steering, operate the machine in a lower speed range in a clear open area.

Always set the speed to suit both the operator, operating conditions, and work to be performed. As the operator becomes more familiar with joystick steering, a higher steering speed may be desired.



RCPH10WHL370BAH 4

RIGHT-HAND SIDE CONTROLS

Overview [60629710]

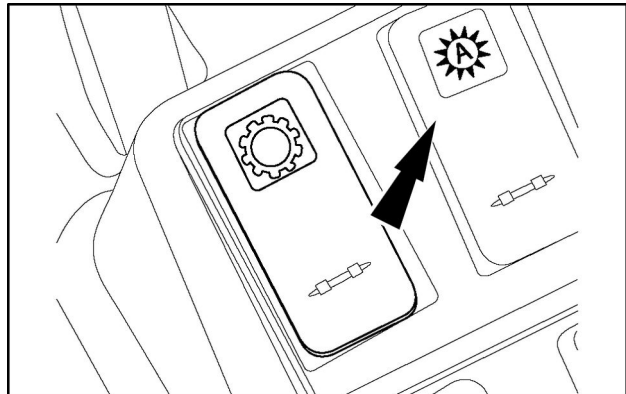
A number of controls and switches are placed on the right side of the operator for ease of use. Control levers, the side console housing the machine operation switches, and the climate control functions are located on the right side of the machine in the operator's compartment.

The configurations on the right side of the operator's compartment in your machine may vary slightly in appearance from those represented in this manual, though all switch symbols and switch function remain the same.

Control levers can vary as well depending on options selected. The different spool valves and control levers are explained on the following pages.

Automatic shift mode

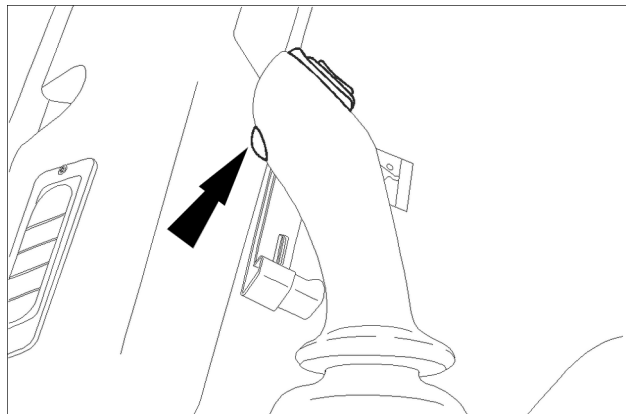
When the transmission is in the automatic mode, the transmission will start out in first gear or second gear (dependent upon gear minimum setting), and automatically up-shift until the gear selected has been reached. The transmission will also down-shift automatically as the speed decreases.



RCIL10WHL177BAL 1

Down-shift button automatic mode

The down-shift button is used to shift down through the gears in single steps. Each time the switch is pressed, the transmission will shift down one gear range until first gear is reached. Once the down-shift button has been pressed down, the transmission maximum gear allowed is lowered. It will return to the automatic mode when (1) the transmission control lever gear changes, or (2) the transmission control lever is moved to NEUTRAL and then to FORWARD or to REVERSE. When the Automatic Mode has been chosen by the operator, the Automatic Mode indicator will be shown in the multi-function display.



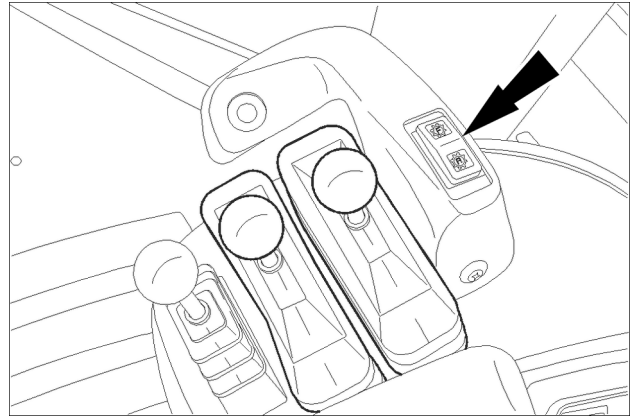
RCPH10WHL120BAL 2

Manual downshift

Manual shifting can be used to down shift in a first to second pattern. First and second gear are the only shift pattern available in the manual downshift mode.

Shuttle shifting - direction change manual or automatic

It is not necessary to bring the machine to a complete stop when changing directions from forward to reverse or reverse to forward. For smooth operation and operator comfort, reduce engine speed before direction changes.



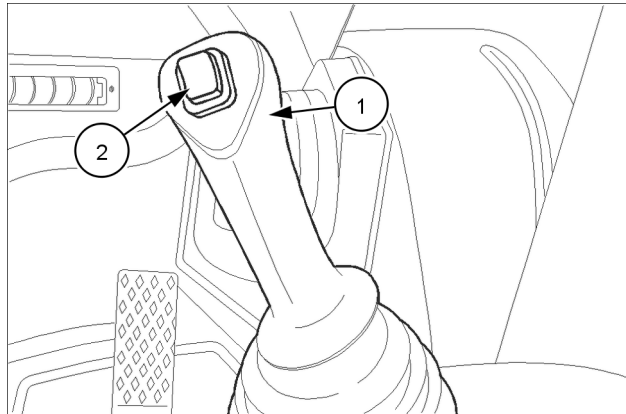
RCPH10WHL110BAL 3

Two function valve [60629755]

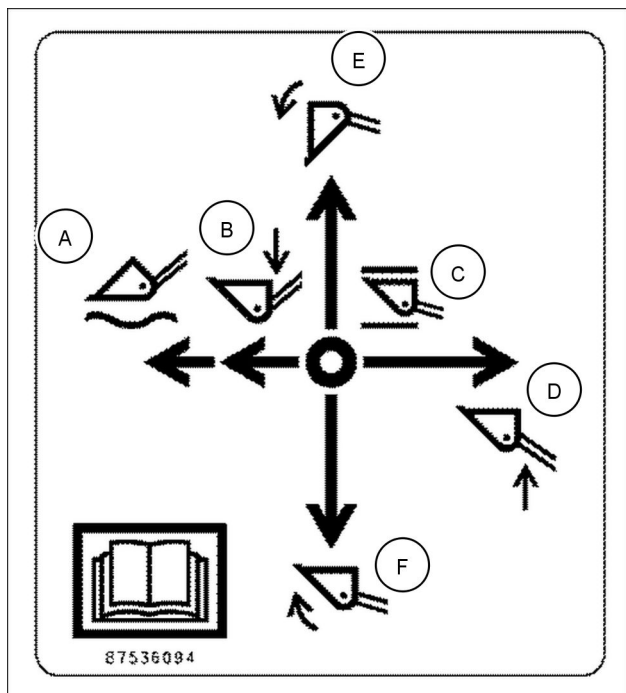
Two function valve - one control lever

1. LIFT ARM AND BUCKET CONTROL

- A. FLOAT (DETENT) - This is a detent position. When in the FLOAT (detent) position, the loader bucket can follow the level of the ground without movement of the control lever
- B. LOWER
- C. HOLD - The loader arms and bucket will not move when the control lever is in the HOLD position. When released, the control lever will automatically return to the HOLD position. You must manually move the control lever from the FLOAT position to the HOLD position.
- D. RAISE
- E. DUMP
- F. ROLLBACK

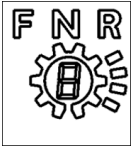


RCPH10WHL121BAL 1

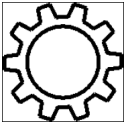


RCPH10WHL008AAL 2

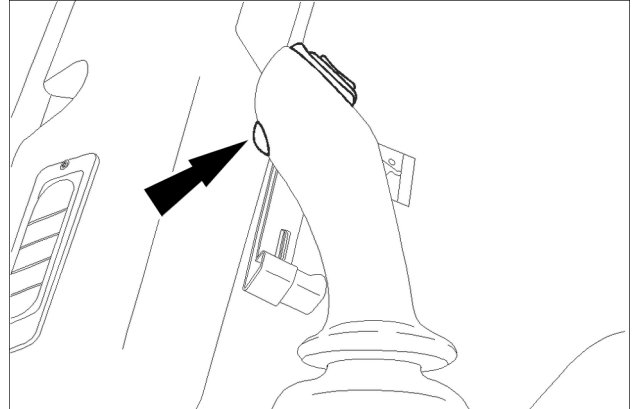
3 - CONTROLS AND INSTRUMENTS



2. F-N-R Switch. This switch allows the operator to put the transmission in forward, neutral, or reverse. To activate this auxiliary F-N-R switch, the proper sequence must be followed. The primary shift lever must be in the neutral position before using the auxiliary F-N-R switch. Push the switch forward to place the transmission in forward, place the switch in the middle position to place the transmission in neutral, and pull the switch rearward to put the transmission in reverse.



3. TRANSMISSION DOWNSHIFT BUTTON - Drops the transmission down one gear at a time.



RCPH10WHL120BAL 3

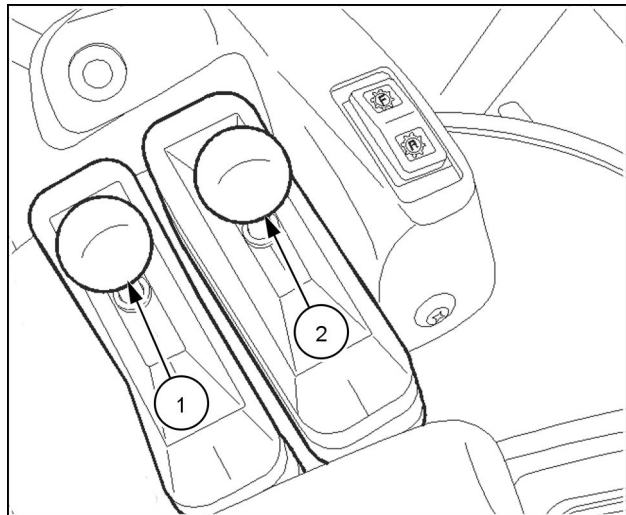
Two function valve - two control levers

1. BUCKET CONTROL

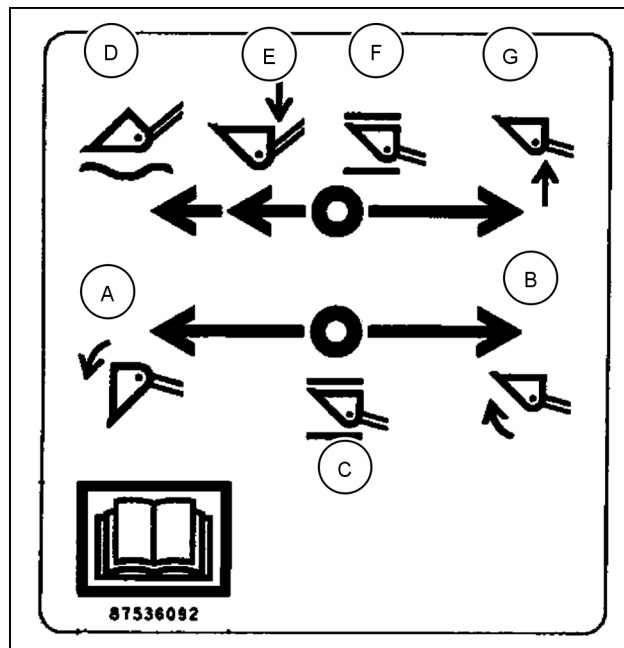
- A. DUMP
- B. ROLLBACK
- C. HOLD - The loader arms and bucket will not move when the control lever is in the HOLD position. When released, the control lever will automatically return to the HOLD position. You must manually move the control lever from the FLOAT position to the HOLD position

2. LIFT ARM CONTROL

- D. FLOAT (Detent) This is a detent position. When in the FLOAT (Detent) position, the loader bucket can follow the level of the ground without movement of the control lever.
- E. LOWER
- F. HOLD
- G. RAISE

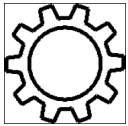


RCPH10WHL019BAH 4

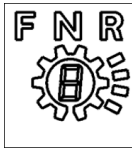


RCPH10WHL020BAH 5

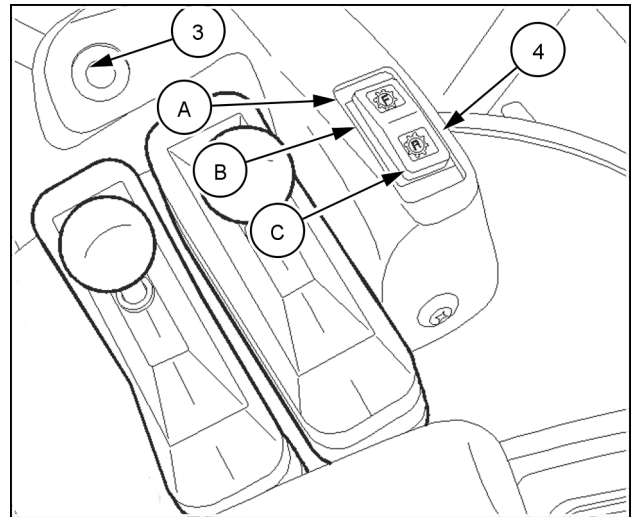
3 - CONTROLS AND INSTRUMENTS



3. TRANSMISSION DOWNSHIFT BUTTON - Drops the transmission down one gear at a time.



4. F-N-R Switch. This switch allows the operator to put the transmission in forward, neutral, or reverse. To activate this auxiliary F-N-R switch, the proper sequence must be followed. The primary shift lever must be in the neutral position before using the auxiliary F-N-R switch. Push the switch forward to place the transmission in forward, place the switch in the middle position to place the transmission in neutral, and pull the switch rearward to put the transmission in reverse.



RCPH10WHL019BAH 6

A. Forward (Transmission)

B. Neutral (Transmission)

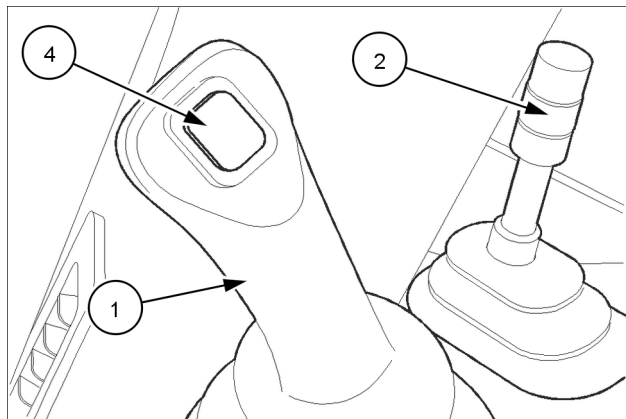
C. Reverse (Transmission)

Three function valve [60629819]

Three function valve - two control levers

1. LIFT ARM AND BUCKET CONTROL

- A. DUMP
- B. ROLLBACK
- C. HOLD - The loader arms and bucket will not move when the control lever is in the HOLD position. The control lever will automatically return to the HOLD position when released. You must manually move the control lever from the FLOAT position to the HOLD position.
- D. FLOAT (DETENT) - This is a detent position. When in the FLOAT (detent) position, the loader bucket can follow the level of the ground without movement of the control lever



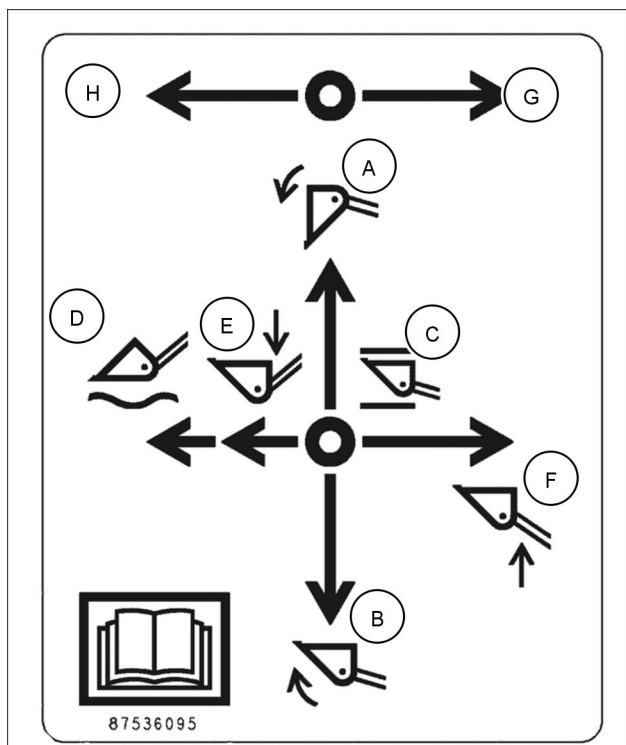
RCPH10WHL119BAL 1

E. LOWER

F. RAISE

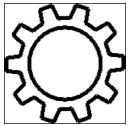
2. AUXILIARY CONTROL

- G. AUXILIARY FUNCTION
- H. AUXILIARY FUNCTION

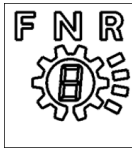


RCPH10WHL010AAL 2

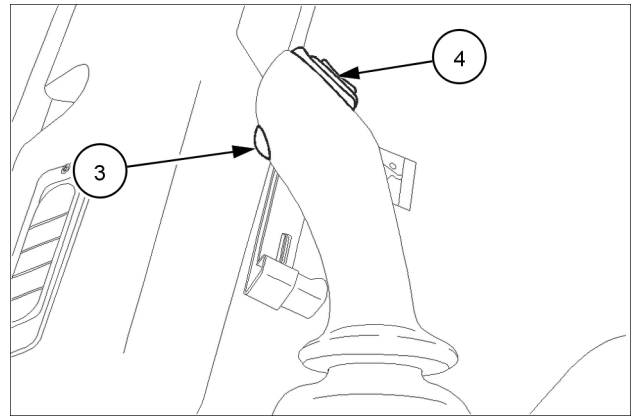
3 - CONTROLS AND INSTRUMENTS



3. TRANSMISSION DOWNSHIFT BUTTON - Drops the transmission down one gear at a time.



4. F-N-R Switch. This switch allows the operator to put the transmission in forward, neutral, or reverse. The proper sequence must be followed in order to activate this auxiliary F-N-R switch. The primary shift lever must be in the neutral position before using the auxiliary F-N-R switch. Push the switch forward to place the transmission in forward, place the switch in the middle position to place the transmission in neutral, and pull the switch rearward to put the transmission in reverse.



RCPH10WHL120BAL 3

- A. Forward (Transmission)
- B. Neutral (Transmission)
- C. Reverse (Transmission)

Three function valve - three control levers

1. BUCKET CONTROL

- A. DUMP
- B. ROLLBACK
- C. HOLD - The loader arms and bucket will not move when the control lever is in the HOLD position. When released, the control lever will automatically return to the HOLD position. You must manually move the control lever from the FLOAT position to the HOLD position.

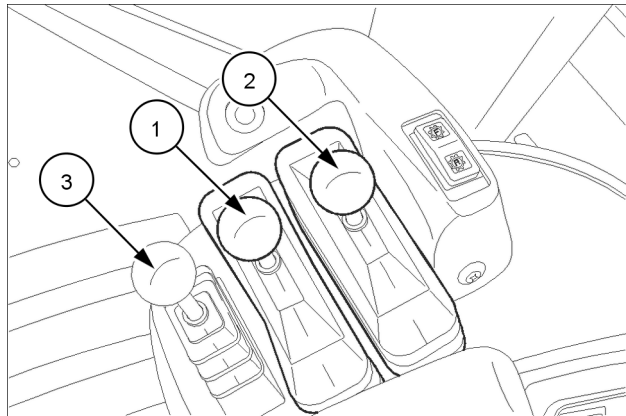
2. LIFT ARM CONTROL

- D. FLOAT (DETENT) - This is a detent position. When in the FLOAT (detent) position, the loader bucket can follow the level of the ground without movement of the control lever
- E. LOWER
- F. HOLD - The loader arms and bucket will not move when the control lever is in the HOLD position. The control lever will automatically return to the HOLD position when released. You must manually move the control lever from the FLOAT position to the HOLD position.

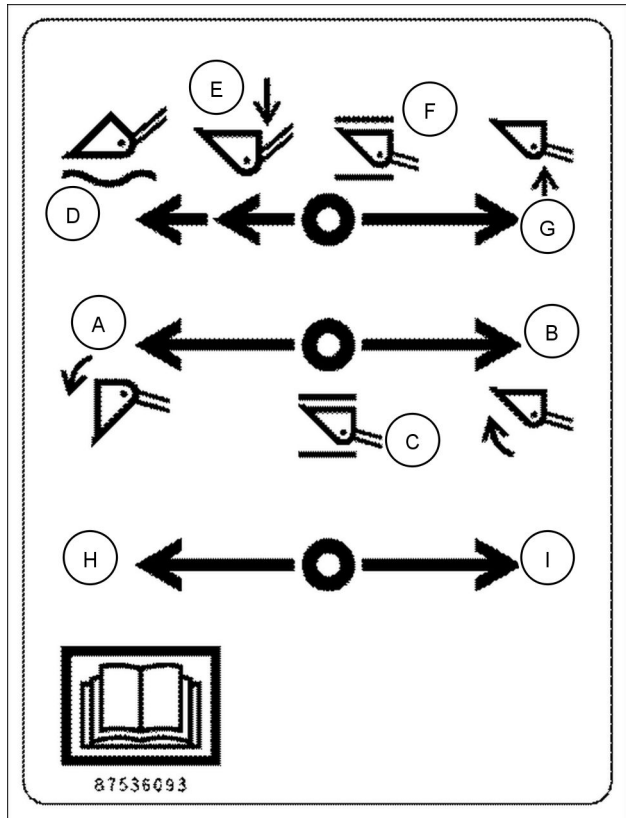
G. RAISE

3. AUXILIARY CONTROL

- H. AUXILIARY FUNCTION
- I. AUXILIARY FUNCTION

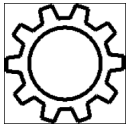


RCPH10WHL110BAL 4

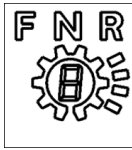


RCPH10WHL009AAL 5

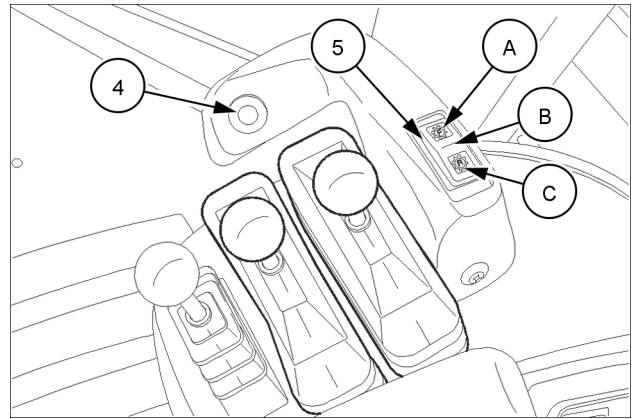
3 - CONTROLS AND INSTRUMENTS



4. TRANSMISSION DOWNSHIFT BUTTON - Drops the transmission down one gear at a time.



5. F-N-R Switch. This switch allows the operator to put the transmission in forward, neutral, or reverse. The proper sequence must be followed in order to activate this auxiliary F-N-R switch. The primary shift lever must be in the neutral position before using the auxiliary F-N-R switch. Push the switch forward to place the transmission in forward, place the switch in the middle position to place the transmission in neutral, and pull the switch rearward to put the transmission in reverse.



RCPH10WHL110BAL 6

A. Forward (Transmission)

B. Neutral (Transmission)

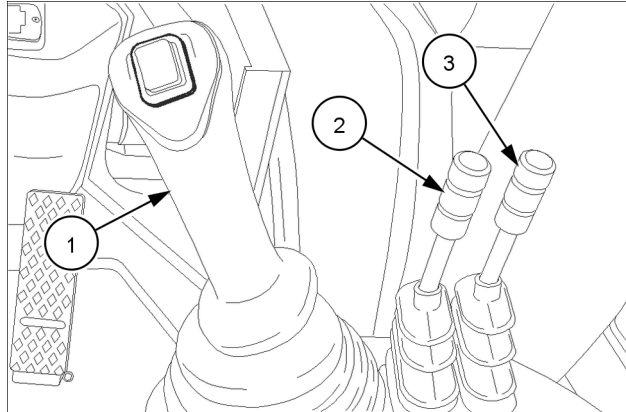
C. Reverse (Transmission)

Four function valve [60629889]

Four function valve - three levers

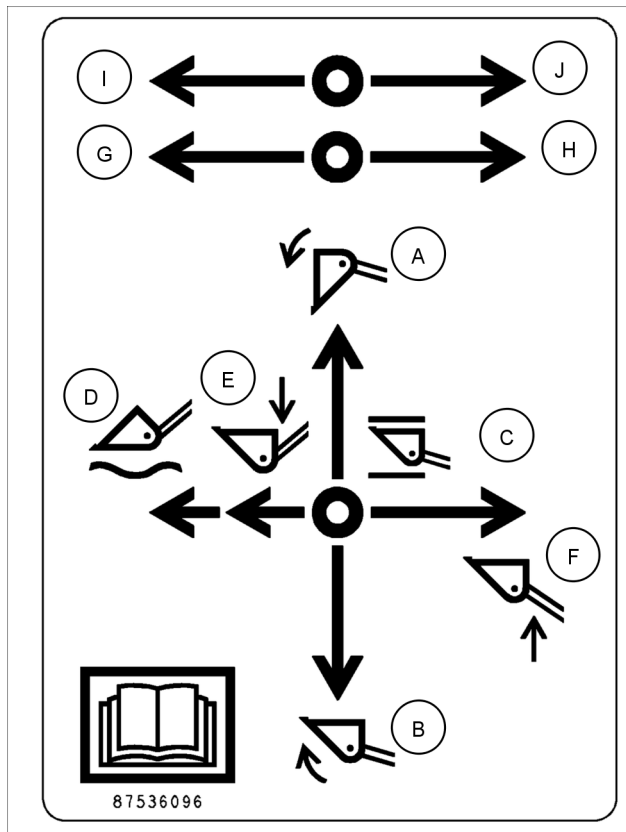
1. BUCKET AND LIFT ARM CONTROL

- A. DUMP
- B. ROLLBACK
- C. HOLD - The loader arms and bucket will not move when the control lever is in the HOLD position. The control lever will automatically return to the HOLD position when released. You must manually move the control lever from the FLOAT position to the HOLD position.
- D. FLOAT (DETENT) - This is a detent position. When in the FLOAT (Detent) position, the loader bucket can follow the level of the ground without movement of the control lever



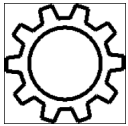
RCPH10WHL109BAL 1

- E. LOWER
 - F. RAISE
- #### 2. AUXILIARY CONTROL
- G. AUXILIARY FUNCTION
 - H. AUXILIARY FUNCTION
- #### 3. AUXILIARY CONTROL
- I. AUXILIARY FUNCTION
 - J. AUXILIARY FUNCTION

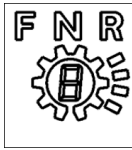


RCPH10WHL002GAL 2

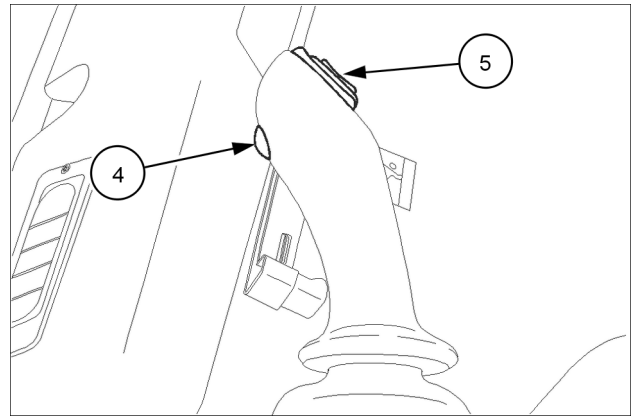
3 - CONTROLS AND INSTRUMENTS



4. TRANSMISSION DOWNSHIFT BUTTON - Drops the transmission down one gear at a time.



5. F-N-R Switch. This switch allows the operator to put the transmission in forward, neutral, or reverse. The proper sequence must be followed in order to activate this auxiliary F-N-R switch. The primary shift lever must be in the neutral position before using the auxiliary F-N-R switch. Push the switch forward to place the transmission in forward, place the switch in the middle position to place the transmission in neutral, and pull the switch rearward to put the transmission in reverse.

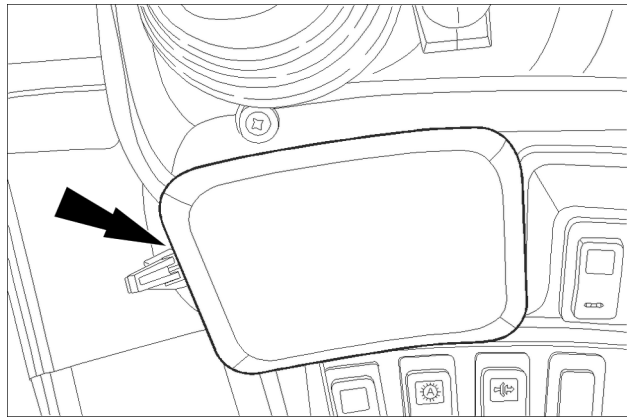


RCPH10WHL120BAL 3

- A. Forward (Transmission)
- B. Neutral (Transmission)
- C. Reverse (Transmission)

Wrist rest [60629942]

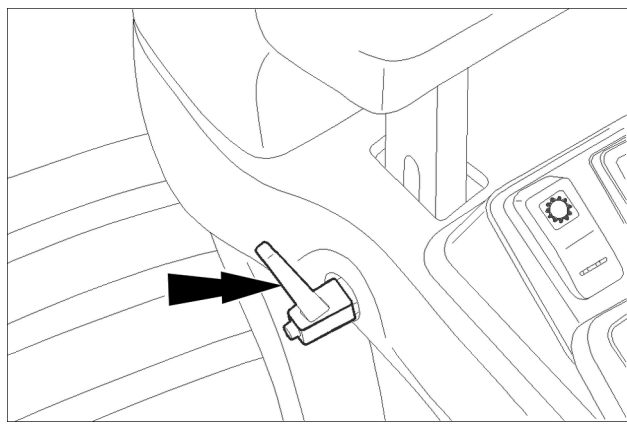
Adjust the wrist rest to a comfortable height to operate the loader control levers.



RCPH10WHL111BAL 1

Adjustment knobs:

To adjust the wrist rest, loosen the adjustment knob. Adjust the wrist rest to a comfortable height. The wrist rest can be raised and lowered.



RCPH10WHL113BAL 2

EXTERIOR CONTROLS

Hood switch and master disconnect [60630030]

⚠ WARNING

Automatic closure!

Keep your hands and body and all personnel clear of the machine hood as it closes.
Failure to comply could result in death or serious injury.

W0048A

Hood Switch

The hood switch is located on the left side of the machine. The hood, left, and right side engine covers allow access to both engine sides, air cleaner and coolers. A locking mechanism is provided for the hood switch cover. Use the machine key to open and close this cover.

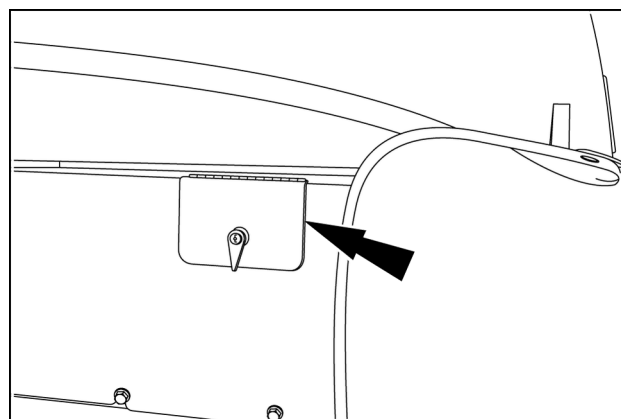
1. Insert the key. Make sure to completely insert the key for proper operation.

NOTICE: Damage can occur to the key or locking mechanism if key is improperly inserted and turned.

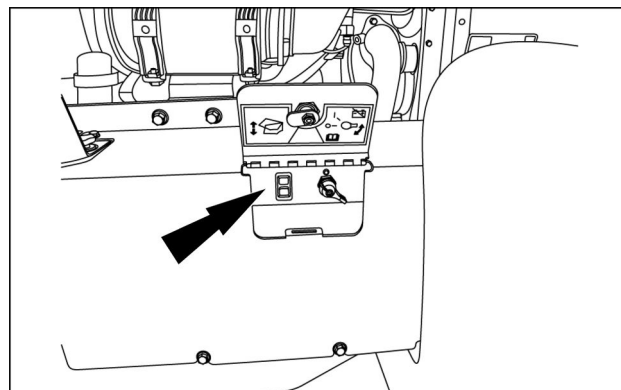
2. After releasing the lock, remove the key and open the cover.

3. The hood switch will automatically raise the hood on the machine. Keep all tools, service equipment, and personnel away from the hood when it is automatically opening and closing.

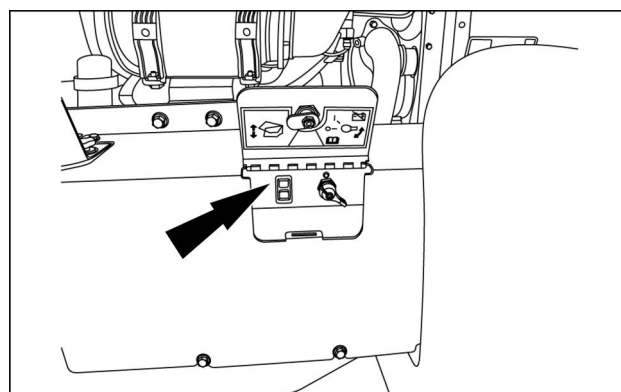
4. Push up on the switch to raise the hood. The switch will remain in the up position for hands free opening. To close the hood, push down on the switch. As a built in safety measure, the down control must be held in order to lower the hood.



RCPH10WHL425AAH 1



RCPH10WHL106AAH 2



RCPH10WHL106AAH 3

Manual hood opening

⚠ WARNING

Crushing hazard!

The hood is extremely heavy. When manually raising the hood, use suitable blocking equipment and watch for sharp edges on machine.

Failure to comply could result in death or serious injury.

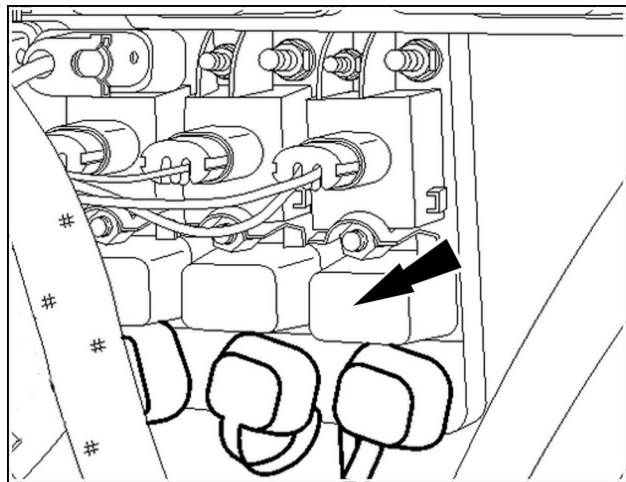
W0049B

If the machine has no power or the battery is too low for the hood switch to function:

NOTICE: Do not use this procedure to start the engine. Jump starting the engine from this location may cause electrical and/or harness damage to the machine.

This machine is equipped with a **24 V** system. Use appropriate booster battery equipment.

1. Use booster battery cables to provide power. Connect the positive booster cable to the cab B+ junction post, located behind the right side cab access door.
2. Connect the negative cable to a proper ground. The hood may now be operated at the switch.

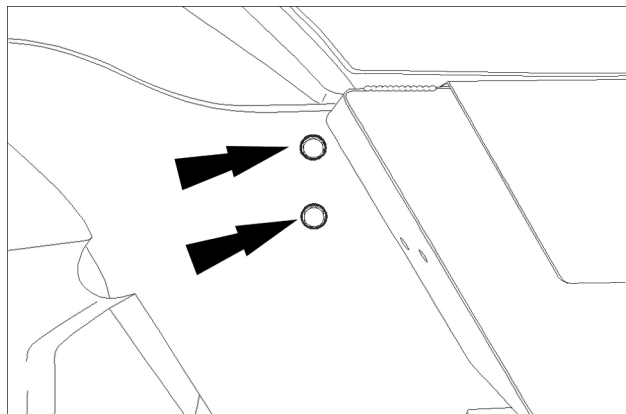


RCPH10WHL591AAH 4

If the machine has power, but the actuator is not functioning

Keep all non-authorized personnel clear of the area. Park the machine on firm, level ground, and lower the attachment. Put the transmission in neutral and apply the parking brake. Turn the engine off.

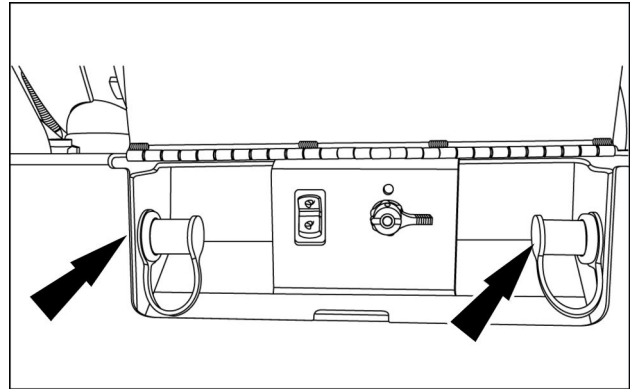
1. Remove the two actuator mounting bolts at the left rear of the machine just in front of the battery compartment.
2. Raise the hood manually with a suitable hoist. block for safety. Do not allow the hood to swing over any personnel.



RCPH10WHL065BAL 5

Jump post (optional)

Battery jump posts are located inside the hood opening and master disconnect compartment. The positive and negative posts allow a booster battery to be used, if necessary to start the machine or to raise the hood.

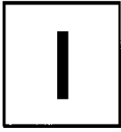


RCPH10WHL214AAH 6

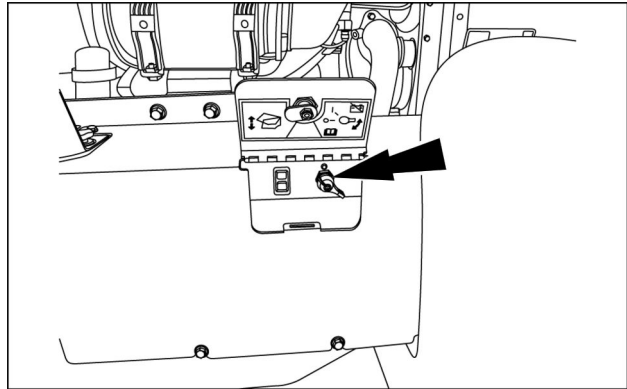
Master electrical disconnect switch

The master electrical disconnect switch has two positions: ON and OFF.

Master electrical switch ON

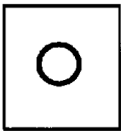


The master disconnect switch in the ON position energizes the entire electrical system. When the master disconnect switch is ON and the key switch is OFF, the dome lamp, horn, stop lamps, four-way flashers, and rotary light switch are powered and functional.



RCPH10WHL106AAH 7

Master electrical switch OFF

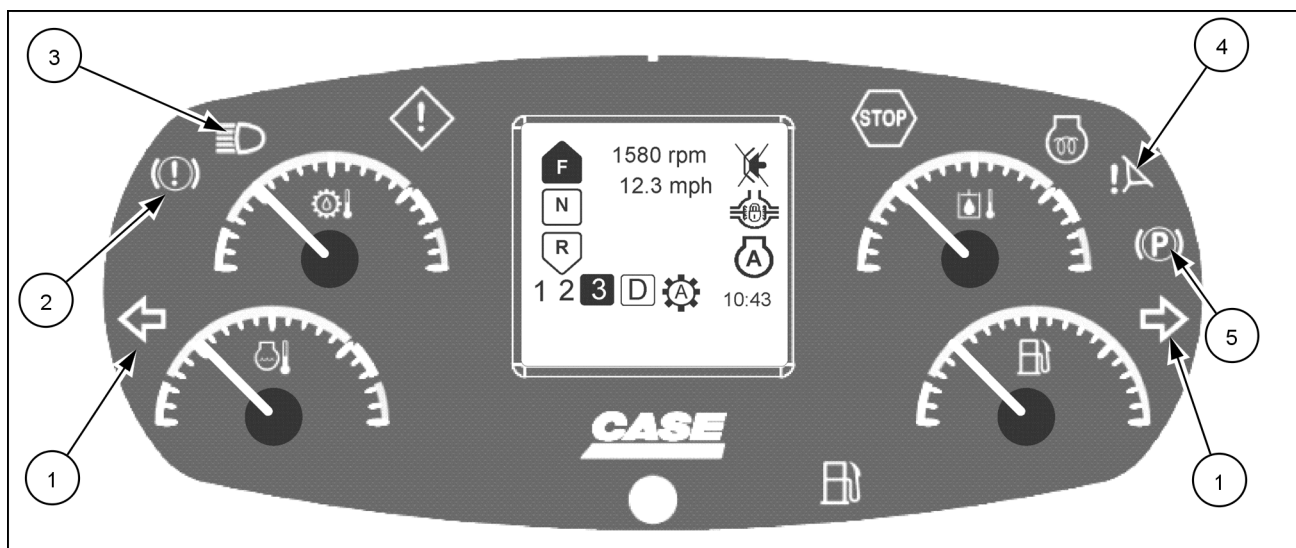


In the OFF position, all machine power is interrupted.

NOTICE: DO NOT use the master electrical disconnect switch to stop the engine.

INSTRUMENT CLUSTER

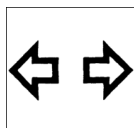
Overview [60630240]



RCPH10WHL583GAH 1

Instrument panel indicators

The instrument cluster will check each monitored system when you turn the key switch to the ON position. All Light Emitting Diodes (LED) will illuminate, and the warning alarm will sound for three seconds. At the end of this check all monitored systems will return to normal operation. If there is an open circuit between a sensor and the instrument cluster on some circuits, the LED will flash and the warning alarm will sound for 5 seconds.



1. Four-way flasher and turn signal indicator

The indicator lamps will flash when a turn is signaled or when the four-way flashers are activated.



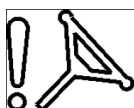
2. Brake pressure indicator

The indicator illuminates when the brake system pressure is too low. The alarm sounds continuously, and the stop master indicator will be red. Stop the machine, and correct the problem.



3. Lamp indicator

The indicator illuminates when the driving high beam lamps are ON.



4. Secondary steering (if equipped)

This indicator illuminates when the primary steering system pressure is too low. The alarm sounds continuously and the stop master indicator turns red.

If this situation occurs, stop the machine immediately and contact your dealer.



5. Parking brake indicator

This indicator illuminates when the parking brake is applied.

Status and warning icons [60630461]

6. Stop master indicator (Red, critical)



The Stop Master Indicator is a critical warning display. See Critical Warning Displays. When the Stop Master indicator illuminates, IMMEDIATELY bring the machine safely to a stop, and turn the engine OFF.

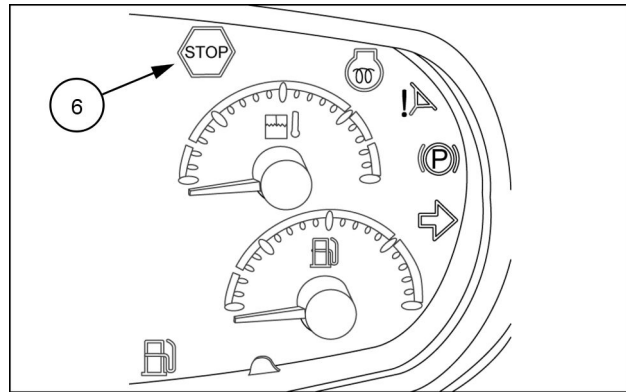
⚠ WARNING

Damaged components can cause a vehicle accident.

If the STOP master indicator illuminates, immediately and safely bring the machine to a stop and turn the engine off.

Failure to comply could result in death or serious injury.

W0050A



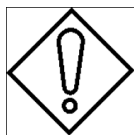
RCIL10WHL178BAL 1

The following table lists critical warning displays that may appear on the instrument cluster and the corrective action that is required. Should a fault occur, a continuous audible alarm will sound and the Stop Master Indicator will be RED. A warning message will be displayed in the message area.

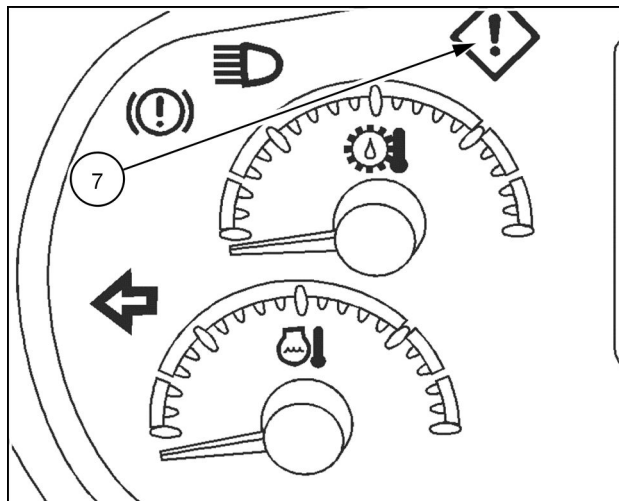
Critical Warnings

Display	Description	Corrective Action
Engine oil pressure	Low engine oil pressure	Bring the machine to a safe stop, and turn the engine OFF immediately. Contact your Dealer.
Brake pressure	Low brake pressure	Bring the machine to a safe stop, and turn the engine OFF immediately. Contact your Dealer.
Steering pressure (w/auxiliary steering)	Low steering pressure	Bring the machine to a safe stop, and turn the engine OFF immediately. Contact your Dealer.
Coolant temperature	High engine coolant temperature	Bring the machine to a safe stop, and turn the engine OFF immediately. Check the coolant levels after allowing the engine and the coolant to cool. Contact your Dealer.
Hydraulic oil temperature	High hydraulic oil temperature	Bring the machine to a safe stop, and turn the engine OFF immediately. Contact your Dealer.
Transmission oil temperature	High transmission oil temperature	Bring the machine to a safe stop, and turn the engine OFF immediately. Contact your Dealer.

7. Caution master indicator (Yellow, non-critical)



The caution master indicator is a non-critical warning display. See the non critical warning chart. When the caution master indicator is ON, change the operating method, schedule a shutdown for maintenance, or if the condition persists, contact your dealer. The non-critical warning table lists warning displays that may appear on the instrument cluster and the corrective action required.



RCIL10WHL179BAL 2

NOTICE: When a fault occurs, an audible alarm may sound and the Caution Master Indicator will be yellow. The caution message will be displayed in the message area. If this occurs, return the machine to a service position, and turn the engine off, and take corrective action to help avoid expensive repairs.

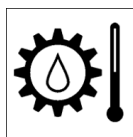
Non-critical warnings

Display	Description	Corrective action
Parking brake	Parking brake engaged and machine shifted forward or reverse	Release the parking brake.
Coolant temperature	High engine coolant temperature	1. Idle machine and monitor temperature. 2. Clean radiator or operate fan reverser (If equipped) 3. Check coolant level and add coolant if necessary 4. If condition persists, contact your dealer.
Hydraulic temperature	High hydraulic temperature	1. Idle machine and monitor temperature. 2. Clean cooler or operate fan reverser (If equipped). 3. Check hydraulic fluid level. 4. If condition persists, contact your dealer.
Transmission temperature	High transmission temperature	1. Idle machine and monitor temperature. 2. Clean cooler or operate fan reverser (If equipped). 3. Use a lower gear. 4. If condition persists, contact your dealer.
Air filter	High air filter restriction	1. Clean air filter. 2. Replace primary and secondary filters. 3. If condition persists, contact your dealer.
Transmission filter	Transmission filter restriction	1. Replace transmission filter. 2. If condition persists, contact your dealer.
Hydraulic filter	Hydraulic filter restriction	1. Replace hydraulic filter 2. If condition persists, contact your dealer.

3 - CONTROLS AND INSTRUMENTS

Display	Description	Corrective action
Alternator	Alternator malfunction	1. Check electrical system. 2. Voltages are out of range. 3. Change operating procedure. 4. If condition persists, contact your dealer.
Fuel	Low fuel	Fill fuel tank - do not allow tank to totally empty.

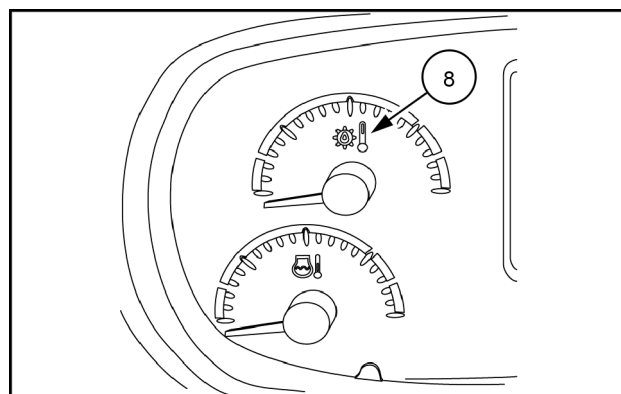
8. Transmission oil temperature gauge



The transmission oil temperature gauge indicates the oil temperature of the transmission.

The Caution Master Indicator is a non-critical warning display. See Non-Critical Warning Displays.

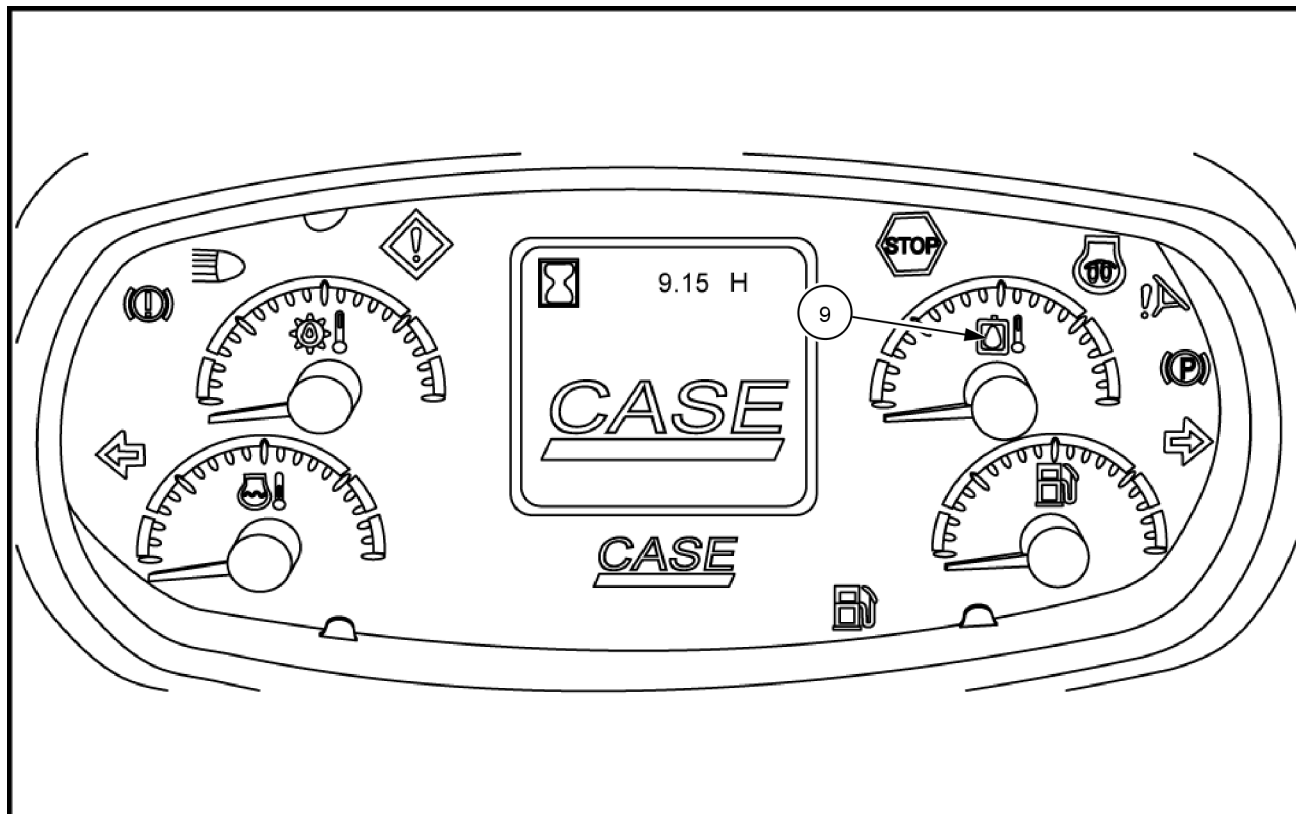
The normal operating temperature is in the green zone. When the transmission oil temperature increases, the gauge will move into the yellow zone, the warning alarm sounds, and the caution master indicator turns yellow. When the temperature continues to increase the gauge moves into the red zone, the warning alarm will sound continuously, and the stop master indicator turns red. Do not operate the machine when the temperature is in the red zone.



RCPH10WHL008AAD 3

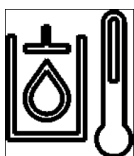
Transmission oil temperature gauge				
Gauge indication	Condition	Master indicator	Gauge status	Alarm status
20 °C (68 °F) and below	Oil temperature is very low	Caution (yellow)	Flashes	3 Seconds
20 - 120 °C (68 - 248 °F)	Oil temperature is normal			
120 - 125 °C (248 - 257 °F) (See the note below.)	Oil temperature is high	Caution (yellow)	Flashes	3 Seconds
125 °C (257 °F) and above	Oil temperature is very high	Stop (red)	Flashes	Continuous

NOTE: To prevent damage to the transmission, stop the machine, shift the transmission to neutral, and run the engine at partial throttle (approximately **1700 RPM**) until the transmission cools. If the transmission oil temperature does not return to normal operating temperature, run the engine at idle speed, and check the transmission oil level. Correct the problem before continuing to operate the machine.

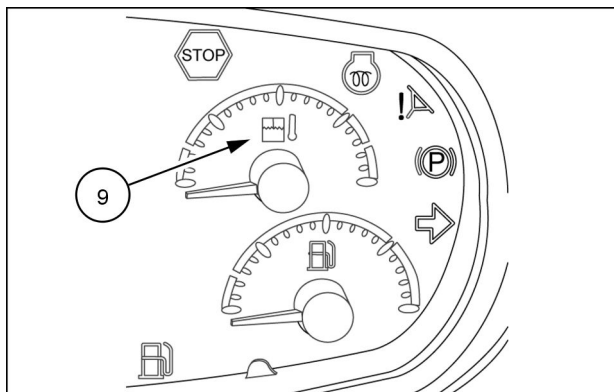


RCPH10WHL001FAD 4

9. Hydraulic oil temperature gauge



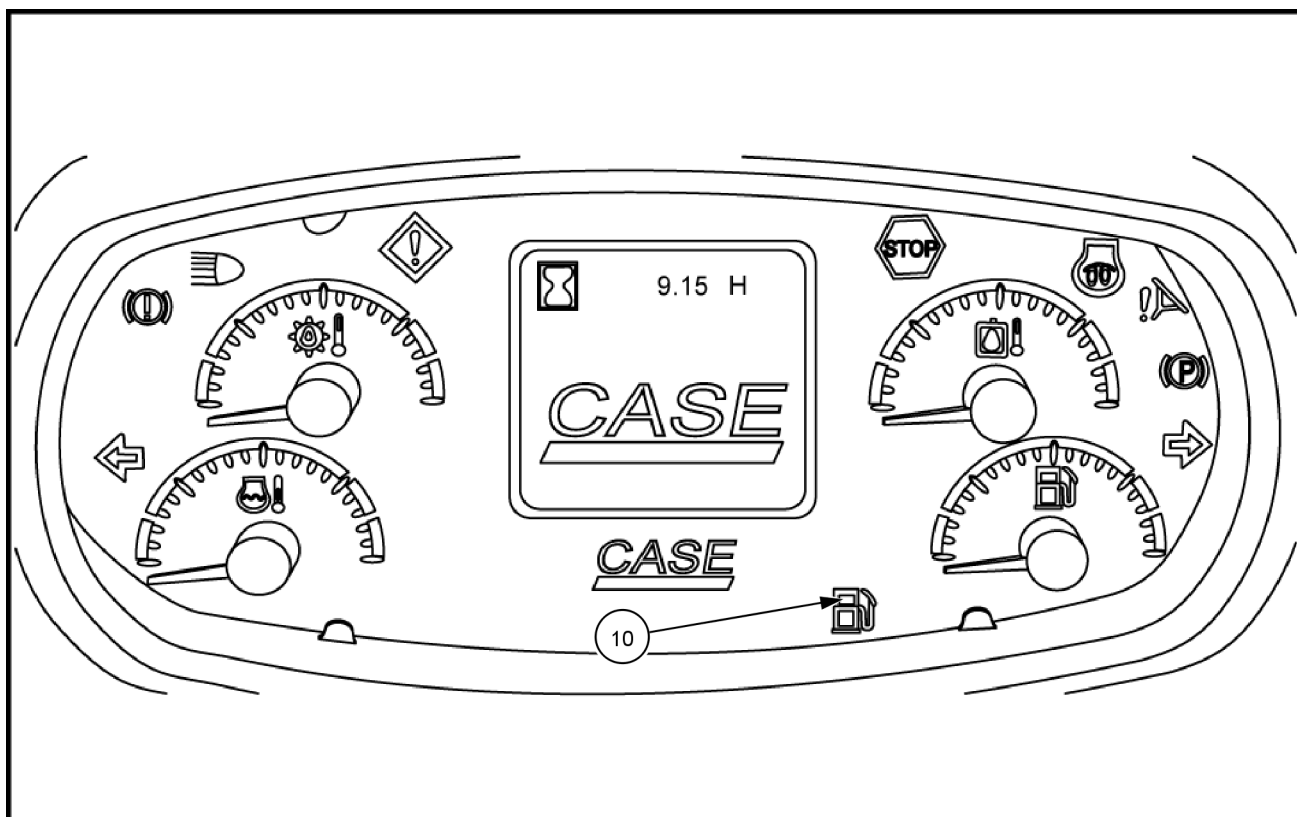
The hydraulic oil temperature gauge indicates the oil temperature of the hydraulic system. Normal operating temperature is in the green zone. When the hydraulic oil temperature increases the gauge will move into the yellow zone, the warning alarm sounds for three seconds, and the caution master indicator turns yellow. When the temperature continues to increase the gauge moves into the red zone and the warning alarm sounds continuously. The stop master indicator turns red. Do not operate the machine when the temperature is in the red zone.



RCIL10WHL180BAL 5

Hydraulic oil temperature gauge				
Gauge indication	Condition	Master indicator	Gauge Status	Alarm Status
20 °C (68 °F) and below	Hydraulic oil temperature is very low	Caution (yellow)	Flashes	3 Seconds
20 - 105 °C (68 - 221 °F)	Hydraulic oil temperature is normal			
105 - 110 °C (221 - 230 °F) (See the note below.)	Hydraulic oil temperature is high	Caution (yellow)	Flashes	3 Seconds
110 °C (230 °F) and above	Hydraulic oil temperature very high	Stop (red)	Flashes	Continuous

NOTE: Do not operate the machine if the indicator turns red and the alarm sounds continuously. Stop the machine and correct the problem.



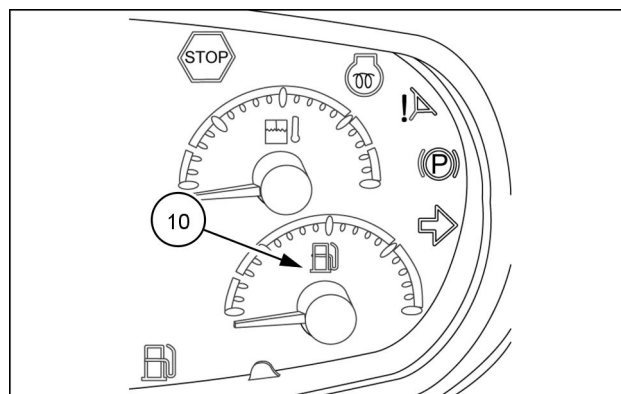
RCPH10WHL001FAD 6

10. Fuel level gauge



The fuel level gauge indicates the fuel level. Normal operating range is in the green zone. When the tank is almost empty the gauge will move into the yellow zone and the fuel indicator will turn on and the warning alarm will sound.

NOTICE: Do not allow the machine to run completely out of fuel.



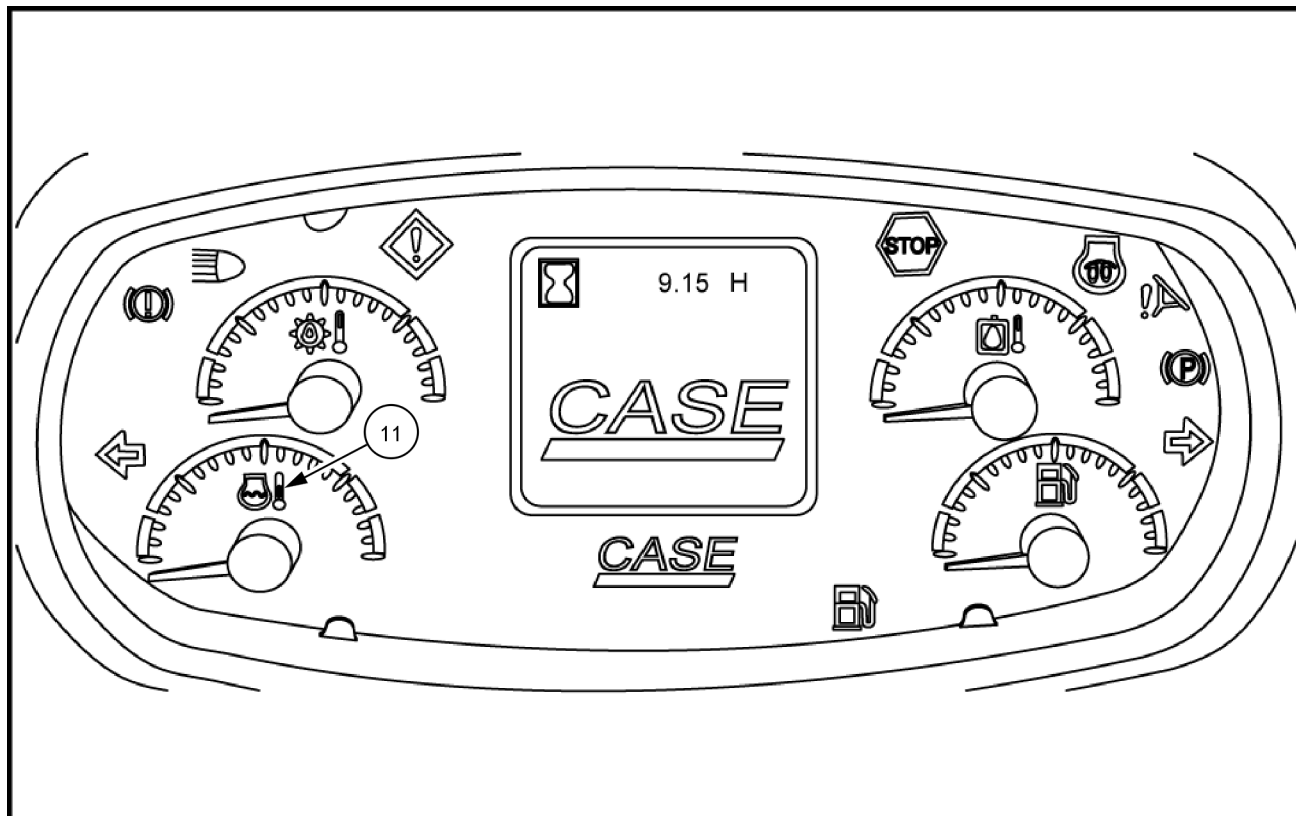
RCIL10WHL180BAL 7

Fuel level gauge				
Gauge indication	Condition	Master indicator	Gauge status	Alarm status
10 % and below	Fuel level low	Caution (yellow)	ON	3 Seconds
10 % and above	Fuel level normal			

⚠ WARNING

Pressurized hydraulic fluid can penetrate the skin and cause severe injuries. If the machine runs out of fuel, do not attempt to work on pressurized hydraulic lines. Lines are under high pressure. Failure to comply could result in death or serious injury.

W0372A

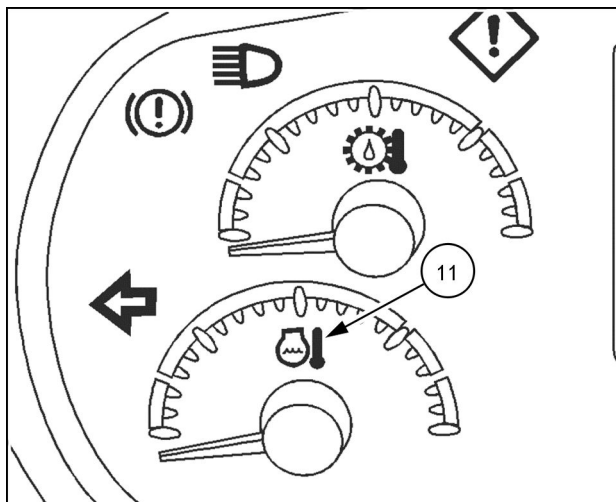


RCPH10WHL001FAD 8

11. Engine coolant temperature gauge



The engine coolant temperature gauge indicates the coolant temperature of the engine. Normal operating temperature is in the green zone. When the engine coolant temperature increases the gauge will move into the yellow zone, and the warning alarm sounds for three seconds. The caution master indicator turns yellow. When the temperature continues to increase the gauge moves into the red zone and the warning alarm sounds continuously. The stop master indicator turns red. Do not operate the machine when the temperature is in the red zone.



RCIL10WHL179BAL 9

Engine coolant temperature gauge				
Gauge indication	Condition	Master indicator	Gauge status	Alarm status
20 °C (68 °F) and below	Coolant temperature is very low	Caution (Yellow)	Flashes	3 Seconds
20 - 105 °C (68 - 221 °F)	Coolant temperature is normal			
105 - 110 °C (221 - 230 °F)	Coolant temperature is high	Caution (Yellow)	Flashes	3 Seconds
110 °C (230 °F) and above (See the note below.)	Coolant temperature is very high	Stop (Red)	Flashes	Continuous

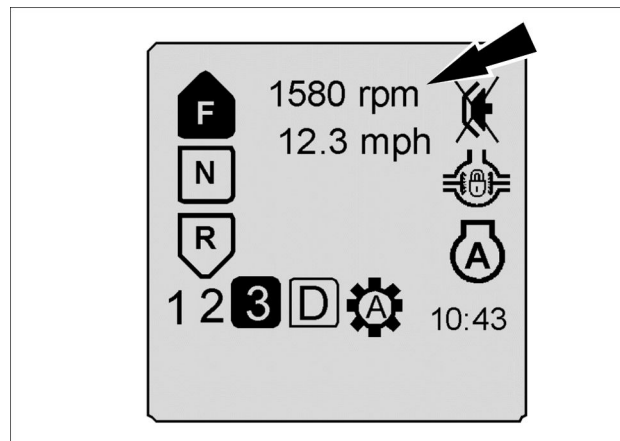
NOTE: Do not operate the machine if the indicator turns red and the alarm sounds continuously. Stop the machine and correct the problem.

Display settings [60630537]

Multi-Function display

The liquid crystal display (LCD) Multi-Function Display is located at the center of the modular dashboard. On start up, the console indicator lamps will momentarily flash. The LCD Multi-Display will flash the machine model. The initial standard driving screen will then appear. Once operator preferences are set, the screen will reflect those selections.

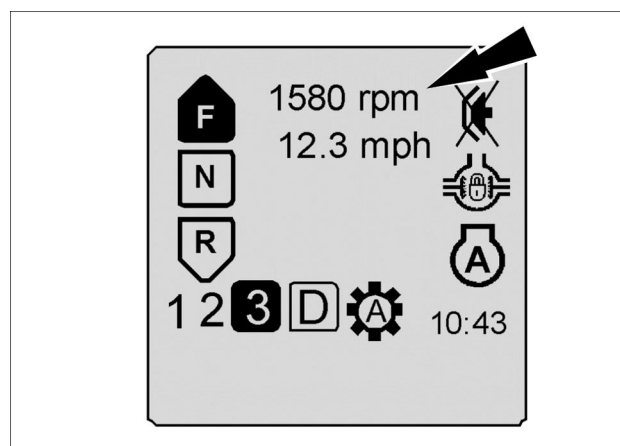
NOTE: Upon initial startup, the operator can push the return key, and the language selection screen will appear immediately. This allows the operator to make a language selection without having to use an unknown language to scroll through to preferences.



RCPH10WHL532AAH 1

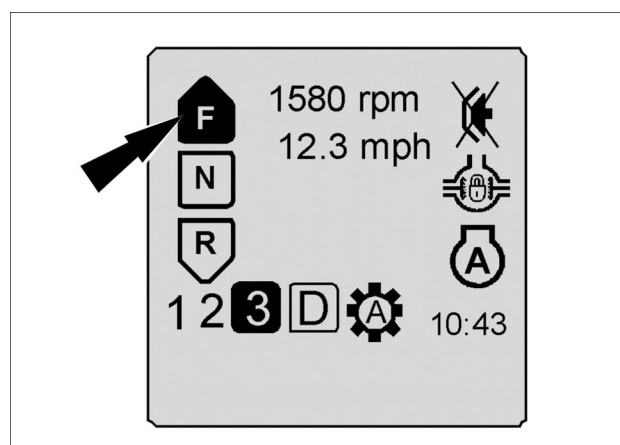
Information will be displayed on the LCD as directed by the operator or automatically by machine operations. The screen offers prompts to assist the operator when programming machine functions and or performing diagnostics.

The top section of the LCD display will show the machine hours, speed, or RPM. The display is controlled by machine technology and geared toward operator preferences. The screen shown is the default screen. By turning the ground speed or engine speed off, the hour meter time registered will display.



RCPH10WHL532AAH 2

The left side of the screen displays the transmission selection forward, neutral, or reverse as selected by the operator. (F-N-R)



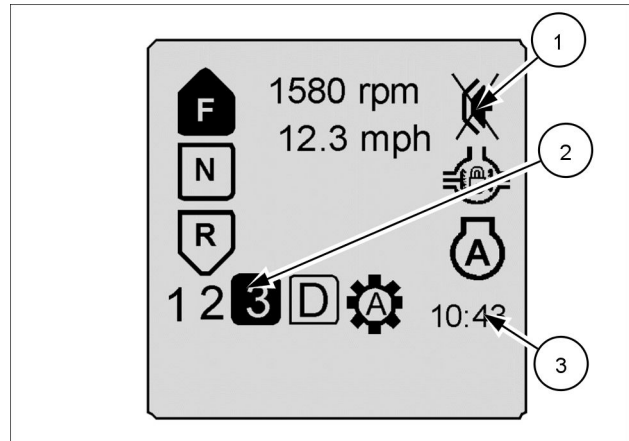
RCPH10WHL532AAH 3

3 - CONTROLS AND INSTRUMENTS

In the example, gearbox function selections (1) are displayed on the right side of the screen. This would include power mode, declutch, joystick steering, etc.

The gear chosen (2) and in this instance automatic transmission mode are displayed.

The lower right (3) displays the clock. Time can be set in either 12 or 24 hour increments.



RCPH10WHL532AAH 4

Keypad [60630759]

Navigation through the Liquid Crystal Display (LCD) multi-function display screens

The key pad is located on the console just below the steering wheel. Use this key pad to move from one screen to another, choose various selections, monitor the machine functions, and retrieve information.

All selections made with the computerized technology of the LCD screen are essentially programmed in the same manner.

When using the screen, use the arrow keys **(C)** and **(D)** to scroll to the desired selection, highlight that selection and press the confirm/enter key **(B)**.

Follow any screen prompts when given and use the confirm key to enter the selection. Use the escape key **(A)** to return to the main menu. This will lock the chosen selection into memory.

All functions can be accessed in the same basic manner.

- A. Escape key - Use this key to exit and return to the driving screen. This key can be used anytime to start over and begin again or to exit a field. It can also be used to electronically check fault codes.
- B. Enter/confirm key - Use this key to confirm selections: After selections have been highlighted, use the enter/confirm key to choose selections.
- C. Up arrow key - Use this key to scroll up to selections.
- D. Down arrow key - Use this key to scroll down to selections.

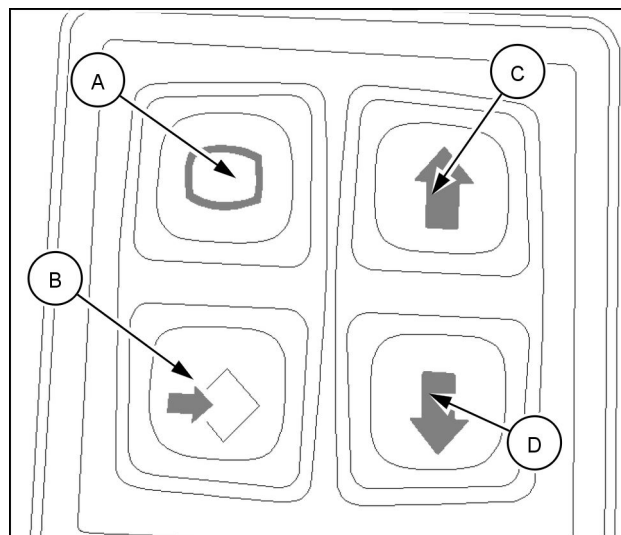
NOTE: Arrows on the screen will indicate if selections are up or down from the current selection.

Using the arrow keys

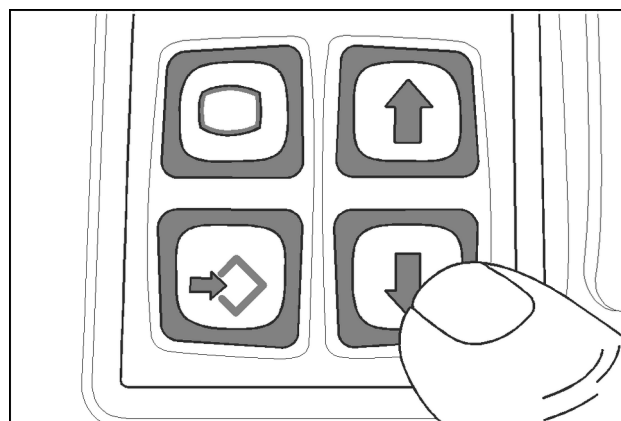
At any time during operation or with the key switch ON, the operator may scroll through four information screens and two trip screens by using the arrow keys. These screens are in a circular loop and may be accessed by pressing the up or down key. The following sequence shown uses the down key only.

NOTE: Pressing the escape key will return the LCD back to the normal driving screen. In order to lock the changes into memory, the operator must press the confirm key, then use the escape key to return to the main screen. Turning the machine off will also lock the settings into memory.

From the driving screen, push the down arrow, as shown.



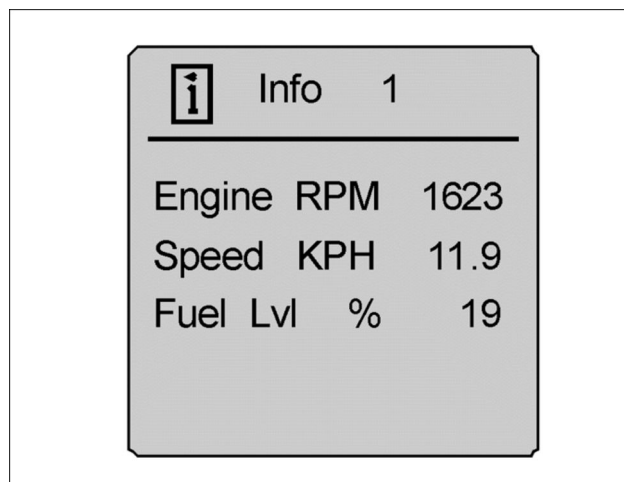
RCIL10WHL182BAL 1



RCPH10WHL021BAL 2

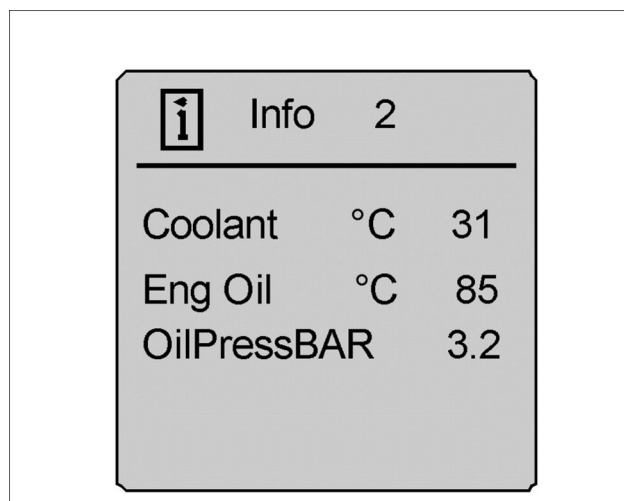
Viewing screens

Info 1 is the first information screen displayed when using the down arrow from the driving screen. It displays engine RPM, speed, and fuel level.



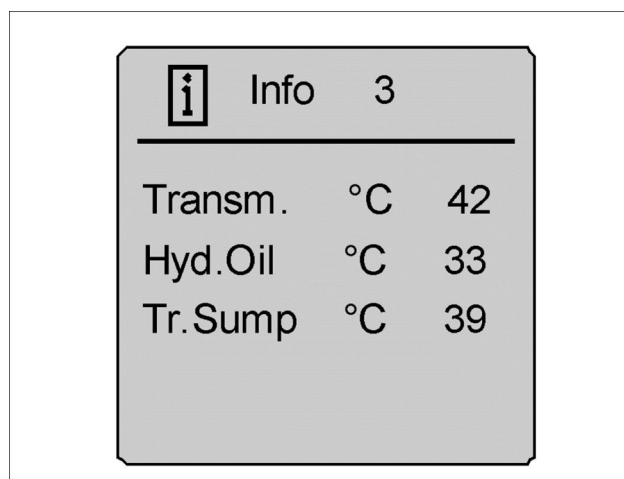
RCPH10WHL533AAH 3

Press the down key again to display Info 2 screen. This screen will display coolant temperature, engine oil temperature, and oil pressure. Temperature can be displayed in either Fahrenheit or Celsius.



RCPH10WHL534AAH 4

Push the down key again to display the Info 3 screen. This screen displays the temperature in Fahrenheit or Celsius of the transmission oil, hydraulic oil, and sump oil.



RCPH10WHL531AAH 5

3 - CONTROLS AND INSTRUMENTS

Push the down key again to display the Info 4 screen. This screen displays voltage and the temperature in Fahrenheit or Celsius of the turbocharger air.

	Info	4
Voltage	V	24.2
Air Turbo	°C	42

RCPH10WHL530AAH 6

Press the down key again and the Trip 1 screen will display. The LCD provides two trip computers. These will display since last reset the total time in hours, the total fuel, and the average fuel consumption per hour.

Trip 1		
12AUG2009,		02:35
Time	Hrs	0.9
Fuel	L	10.2
Fuel/hr	L/h	10.3

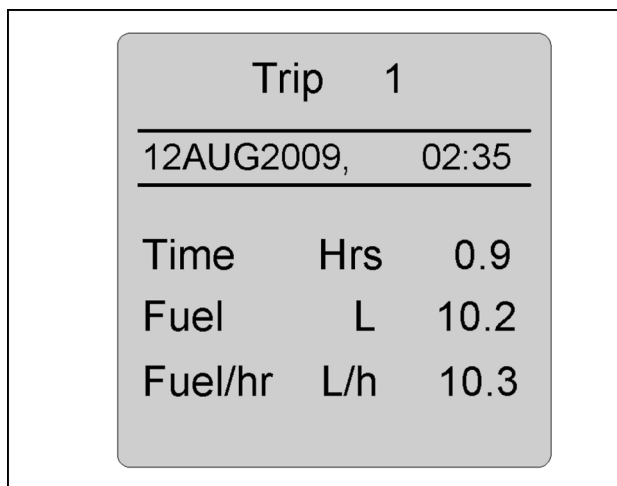
RCPH10WHL353AAH 7

By continuing to scroll down, the sixth screen will display the Trip 2 screen. Trip 1 and Trip 2 screens can be reset independently.

Trip 2		
04May2008,		17:42
Time	Hrs	102.9
Fuel	L	1000.6
Fuel/hr	L/h	9.1

RCPH10WHL354AAH 8

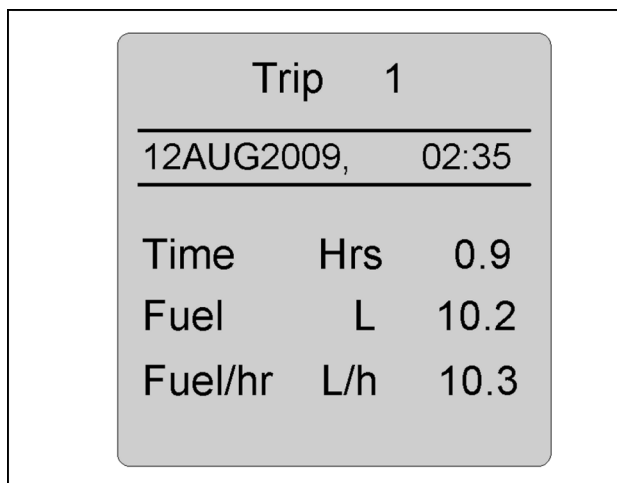
The previous screen can be accessed by using the up arrow key.



RCPH10WHL353AAH 9

Setting trip screens

Highlight the trip screen you wish to set. (Capacity can be set in U.S. gallons, Imperial gallons, or metric liters when setting measurement preferences).

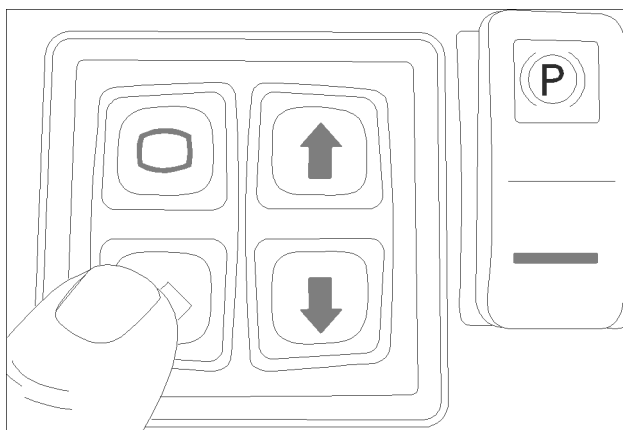


RCPH10WHL353AAH 10

Press the confirm key to reset to the desired trip screen.

The trip screen will indicate a reset message. At this screen, press the confirm key to clear the numbers and reset the trip information. The current date and time will display automatically. The hours, fuel consumption, and fuel used per hour will reset and revert to zero.

Press the escape key to return to the main driving screen and lock settings into memory. The screen will begin to record time and fuel usage immediately.



RCPH10WHL156BAL 11

Entering the service screens

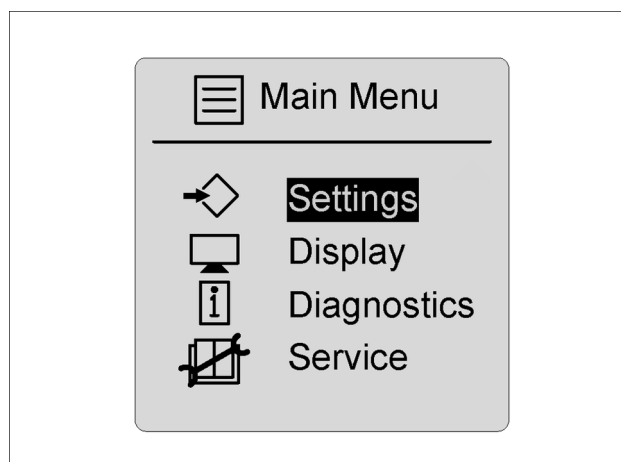
After the machine has been started or the key switch has been turned to ON, the operator or service technician may use the main menu to adjust machine configurations to working conditions, to test components, view faults that may have occurred, or to select preferences. Languages can be set at the beginning of the menu configuration to allow the operator to work in the language of choice.

Main menu

Press and hold the confirm key for two seconds to arrive at the main menu. The arrow keys can be used to scroll through menu selections.

Items and selections in this menu are:

Settings
Display
Diagnostics
Service

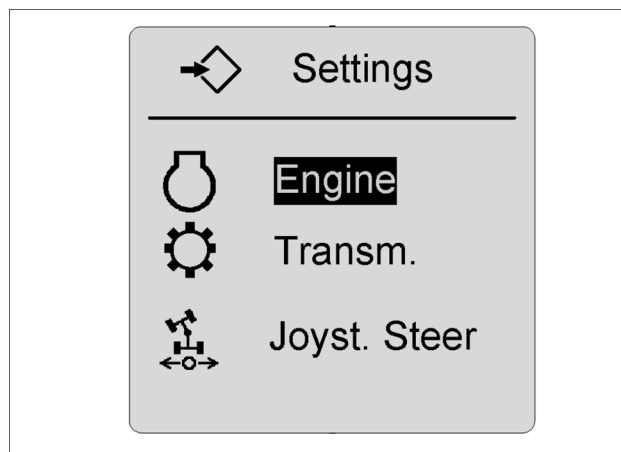


RCPH10WHL804AAH 12

Settings

Selections at the setting menu include:

Engine
Transmission
Joystick steering (Option - will display only if machine is joystick steering equipped)



RCPH10WHL803BAH 13

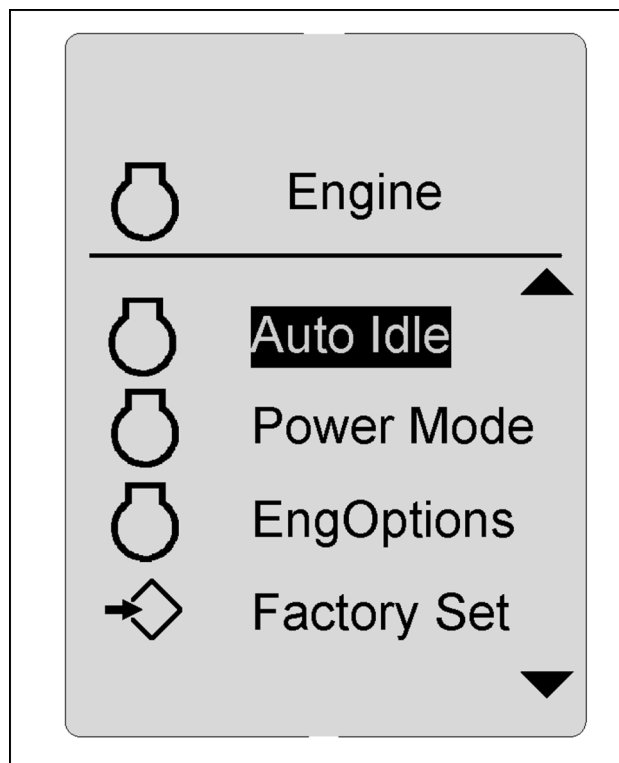
Engine selections

Auto idle (Off, Low, Accelerated)

Power mode (Max, Standard, Auto, Eco)

Engine options (Fan auto, Work idle)

Auto Shutdown (Optional) is used for interval settings



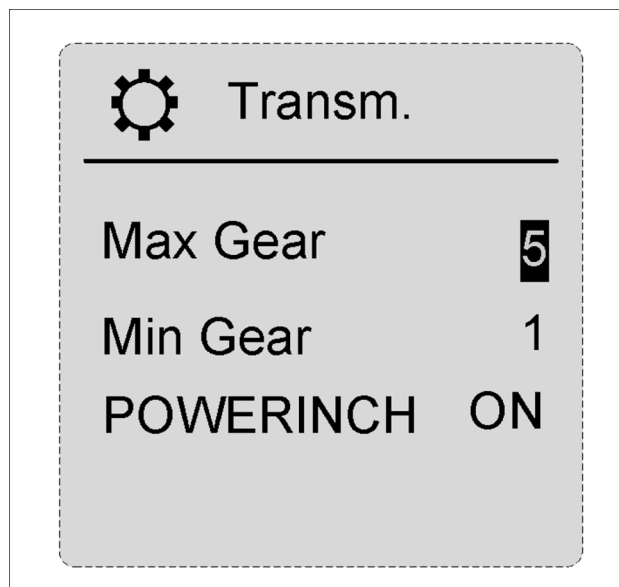
RCPH10WHL367BAH 14

Transmission selections

Min gear

Max gear

Powerinch (5 speed only)



RCPH10WHL369BAH 15

Display

Highlight the DISPLAY selection and press confirm.

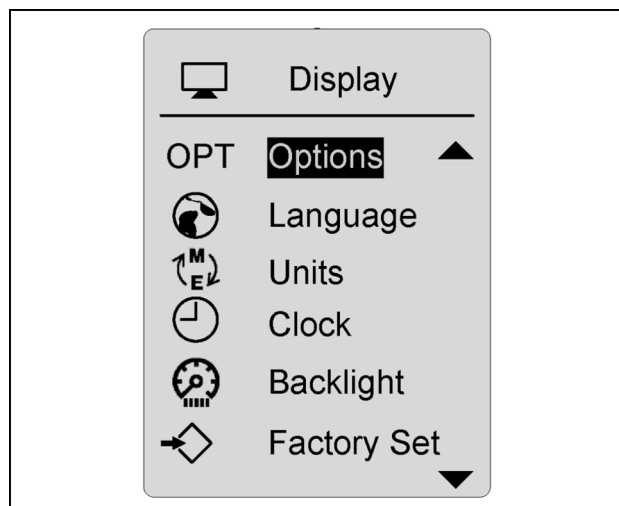
Items and selections in this menu are:

Languages (English, German, French, Italian, Spanish, Portuguese)

Units (Metric, English, Imperial)

Clock (Hour, minute, month, day, year)

Backlight (Day display, day LED, night display, night LED)



RCPH10WHL358BAH 16

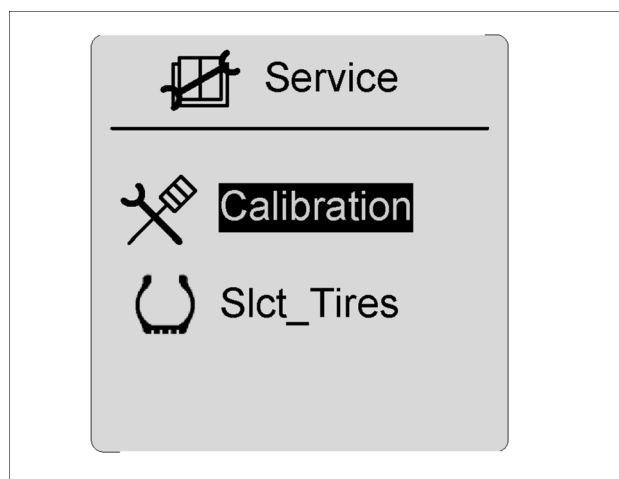
Service

Highlight the desired selection and press confirm. The tests in the configuration menu should be performed only by a qualified operator or technician, as some tests require the engine to be running at high RPM.

Items and selections in this menu are:

Calibration (Park brake, pedal calibration, transmission, and fan test)

Select Tires (tire size)

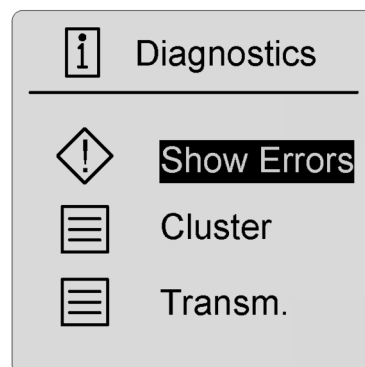


RCPH10WHL801BAH 17

Diagnostics

Highlight the desired selection and press confirm. The diagnostic area should be used by a trained service technician.

NOTE: Pressing the escape key will return the LCD back to the normal driving screen. In order to lock the changes into memory, the operator must press the confirm key, then use the escape key to return to the main screen. Turning the machine off will also lock the settings into memory.



RCPH10WHL802AAH 18

Selecting power modes

The power mode allows the operator to choose the most effective machine power for the current job conditions. Idling can be changed from automatic to a fixed rate.

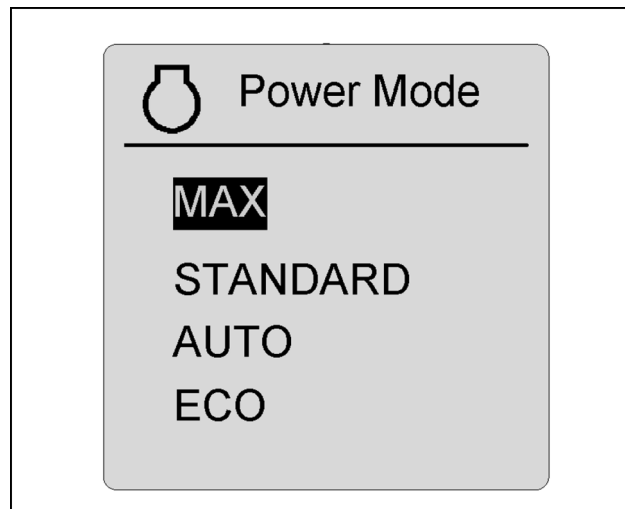
Most commonly Auto is chosen, as the power will automatically increase or decrease between maximum power and standard power while the machine is working. This allows for maximum power if necessary, but will switch to standard mode for economy. Maximum power can be chosen for more severe work conditions. Economy can be chosen for limited power and fuel efficiency.

Press and hold the confirm key for two seconds to arrive at the service screen.

At the screen shown, highlight the power mode, and press the confirm key to move to the power mode selection menu.

At the power mode menu press the confirm key again to activate the selections. The highlighted section will flash to indicate a new selection can be made.

Press the up or down key to select the Power Mode, and then press the confirm key. Use the escape key to return to the main driving screen and to lock the mode selection into memory.



RCPH10WHL372BAH 19

Confirming the selected mode

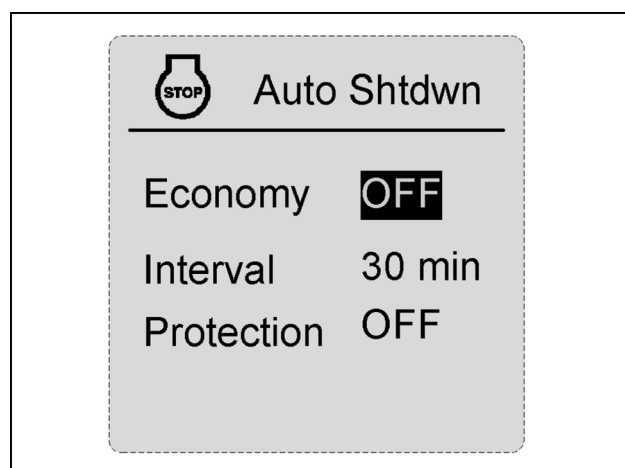
The selected mode will display on the Multi-Function Display when power mode is correctly selected.

Auto idle shutoff (optional)

This optional feature allows the operator to turn the economy auto engine shutdown on or off along with setting the shutdown intervals (5-60 minutes) in five minute increments. The engine and key switch electric power will shut down when the machine is stopped, the transmission is in neutral, and the engine is at idle. The screens will display engine shutdown in a count down of seconds. This allows the operator to cancel this operation. It is designed to save fuel and machine wear when machines are at an idling condition for a set period of time.

In the engine protection mode, a higher level of system protection is offered. If a warning occurs while the machine is moving, the engine speed will reduce to low idle (**900 RPM**) to allow continued movement. When the machine stops, the engine will shut down. The protection system activates if a critical problem occurs.

At the screen shown, highlight the selection, and press the confirm key.



RCPH10WHL390AAH 20

Operator preferences [60630821]

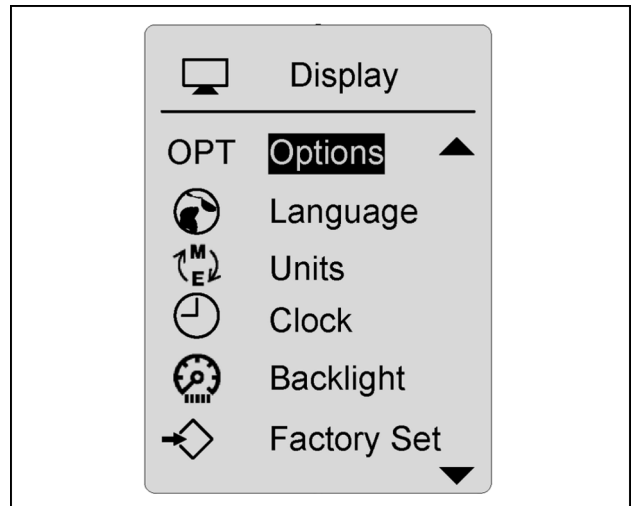
Escaping from errors

When using the machine computer system, you can return to the main menu by pressing the escape key. When setting desired selections, should an error message display, press the escape key and begin again.

NOTE: *Selecting options and navigating through the screen menus are the same for all functions. The display will tell the operator if errors have occurred.*

Language screen, measurement units and clock

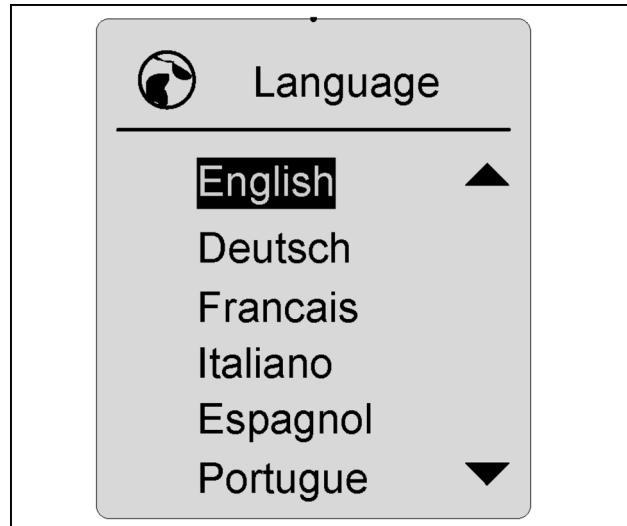
The LCD screen can be set with language, measurements, and/or clock preferences. Use the arrow keys to scroll to the preferences menu. Press the confirm key on the correct selection. Press the escape key to return to the main driving screen and lock the selection into memory.



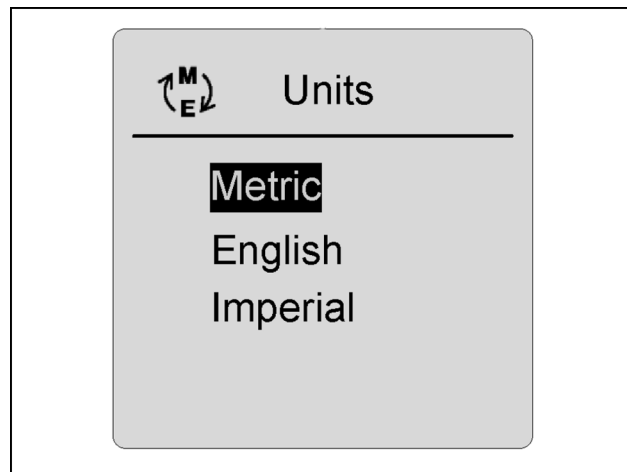
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Languages

Choose the preferences desired: language in English, Spanish, Portuguese, Italian, German, French; measurement units in metric, English, or Imperial; and clock units in 12 or 24 hour cycles. Highlight the preference you wish to change and press the confirm key. The preference will flash and allow you to scroll through the choices. When the correct preference is chosen, press the confirm key, then use the escape key to return to the main driving screen in order to lock the preference into memory.



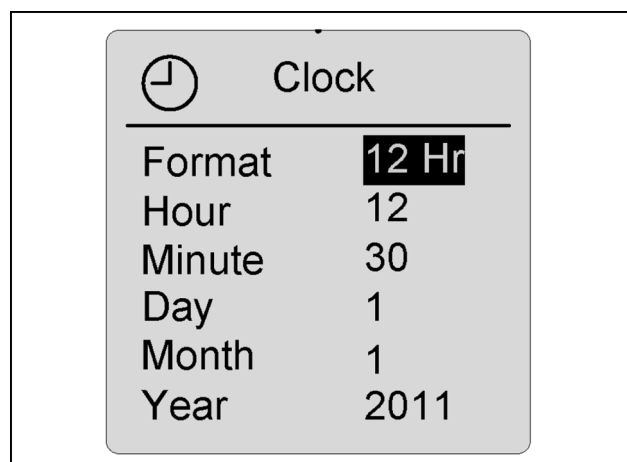
RCPH10WHL361BAH 2



RCPH10WHL362BAH 3

Clock

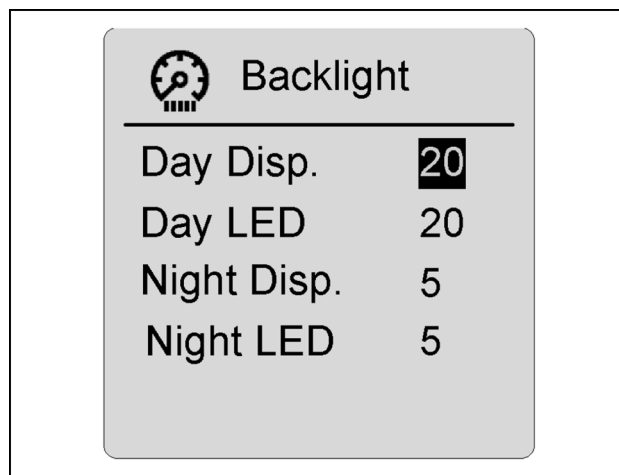
Setting the hour and date - From the select screen, choose the clock designation and press the confirm key. Use the arrow keys to show field for time and date by pressing the arrow key. When the correct time and date have been entered by using the up and down arrow keys (up increases the numbers - down decreases the numbers), press the confirm key to lock in correct time. Press the escape key to return to the main driving screen and lock selections into memory.



RCPH10WHL363BAH 4

Display backlight menu

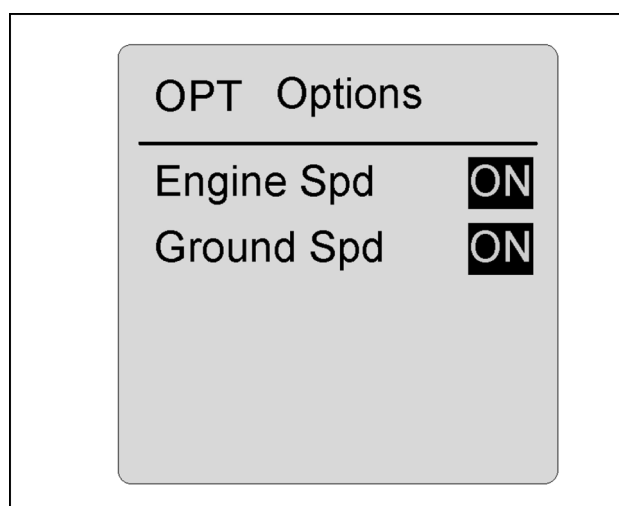
The display menu can be used to change the background and brightness of the screen. Use the arrow keys to make your selection from the display menu and press the confirm key until the screen reverts to the main driving screen to lock the selection into memory. The screen display can be changed to suit working conditions. The screen will change to night function illumination when the head lamps are turned ON.



RCPH10WHL364BAH 5

RPM/speedometer

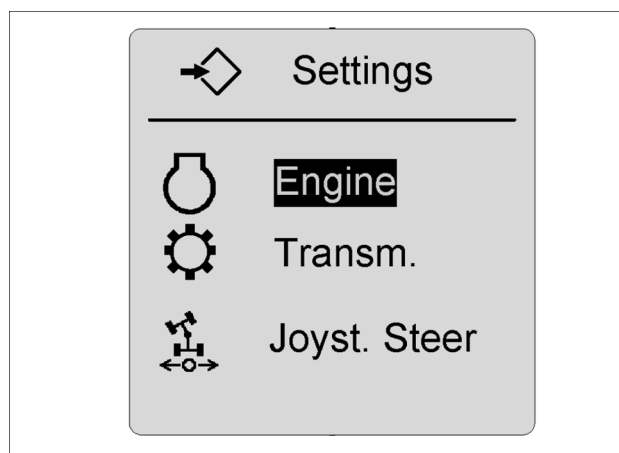
These settings allow the operator to show either speed or RPM's on the main menu when operating the machine. If travel speed is the desired setting, the operator can choose between MPH or km/h for the display. Highlight the desired choice, press the confirm key, then escape back to the main screen to lock the selections into memory. If engine speed or RPM's settings are not selected, the screen will display the hourmeter.



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Engine settings menu

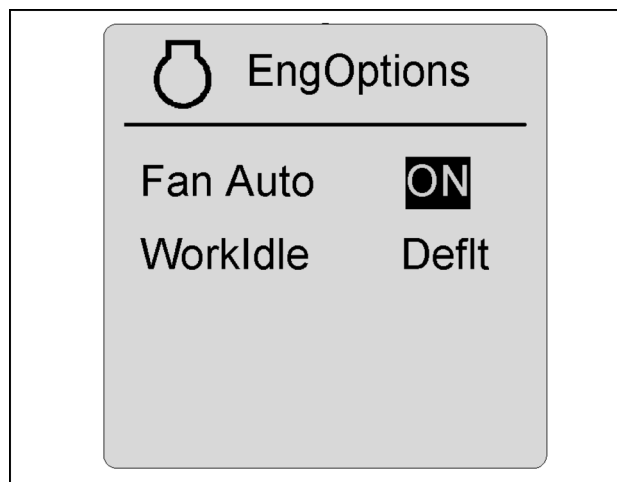
Use the arrow keys to choose the settings menu. Press the enter key, and the settings sub-menu will appear. The options menu will allow the operator to choose options for the fan, idle, power mode, etc.



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Fan auto (if equipped)

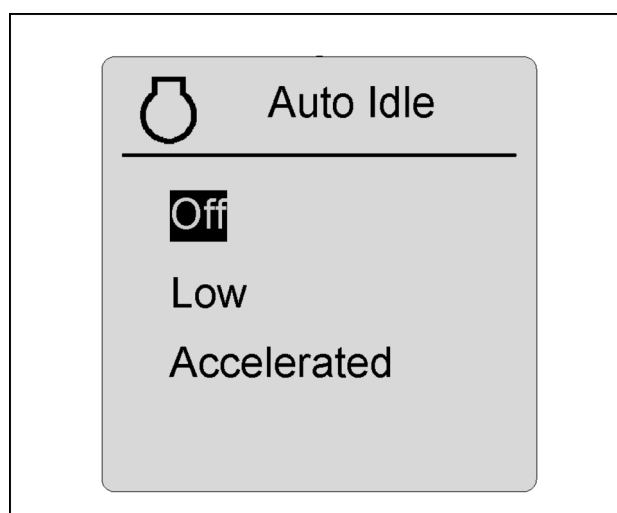
In automatic mode, the fan speed will switch between high, low, or reverse as conditions require. This will depend upon the system temperature. To select the fan mode, highlight the Fan Auto selection on the "Eng Options" screen, then press the confirm key. Scroll through the fan choices, highlight the desired selection and press the confirm key to lock into memory. Use the escape key to return to the main driving menu. The steps will only apply if the machine is equipped with the auto fan feature.



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Auto idle

The auto idle feature has three settings that control the engine low idle speed. This feature only applies when the wheel loader is stationary, in neutral, and not under load. The OFF setting will keep the low idle speed constant at the factory setting independent of engine or ambient temperature. The LOW setting will allow the low idle speed to decrease below the factory setting. By reducing the low idle speed, fuel consumption will be reduced. The ACCELERATED setting will allow the low idle speed to increase above the factory setting. Increasing the low idle speed helps at warm-up and can improve A/C performance. To change the auto idle setting, highlight the "Auto Idle" selection, then press confirm. This will allow you to scroll through the idle choices. Highlight the selection desire, and lock the selection into memory by pressing the confirm key, and then return to the main menu driving screen with the escape key.

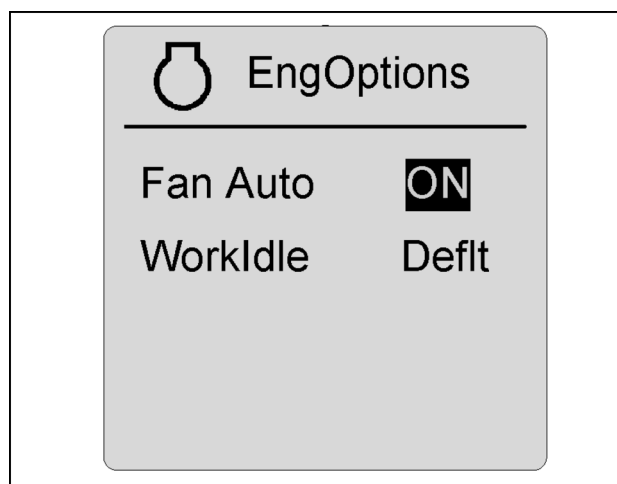


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NOTE: If the wheel loader is shifted out of neutral, put under any load, or if the temperature limits are not met, the idle will default to the standard factory set idle speed.

Work idle

The work idle feature allows the low engine idle speed to be adjusted to a value different from the factory set default low idle. This feature only applies when the transmission is in gear and when the engine speed has gone above the work idle set speed. Setting the working low idle to a low engine speed allows for increased machine control during delicate work and improves fuel consumption. Setting the working low idle to a higher engine speed increases the responsiveness of the machine for maximum performance. To change the work idle setting, highlight the "Eng Options" selection, and press confirm. Next select the "Work idle" selection, and press confirm. Increase or decrease the work idle speed using the arrow keys, then press confirm. Return to the main driving screen by pressing the escape key.



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NOTE: If the transmission is shifted into neutral, the work idle feature will be deactivated.

WARNING DISPLAY AND ERRORS

JOYSTICK STEERING RELATED ERROR HANDLING

All JSS related errors will be displayed only while the JSS activation switch is in ON position except for the red error "Short to power on power supply" and the failure of the activation switch which will be always displayed when present.

All JSS related errors will be reset by switching the JSS activation switch to the OFF position.

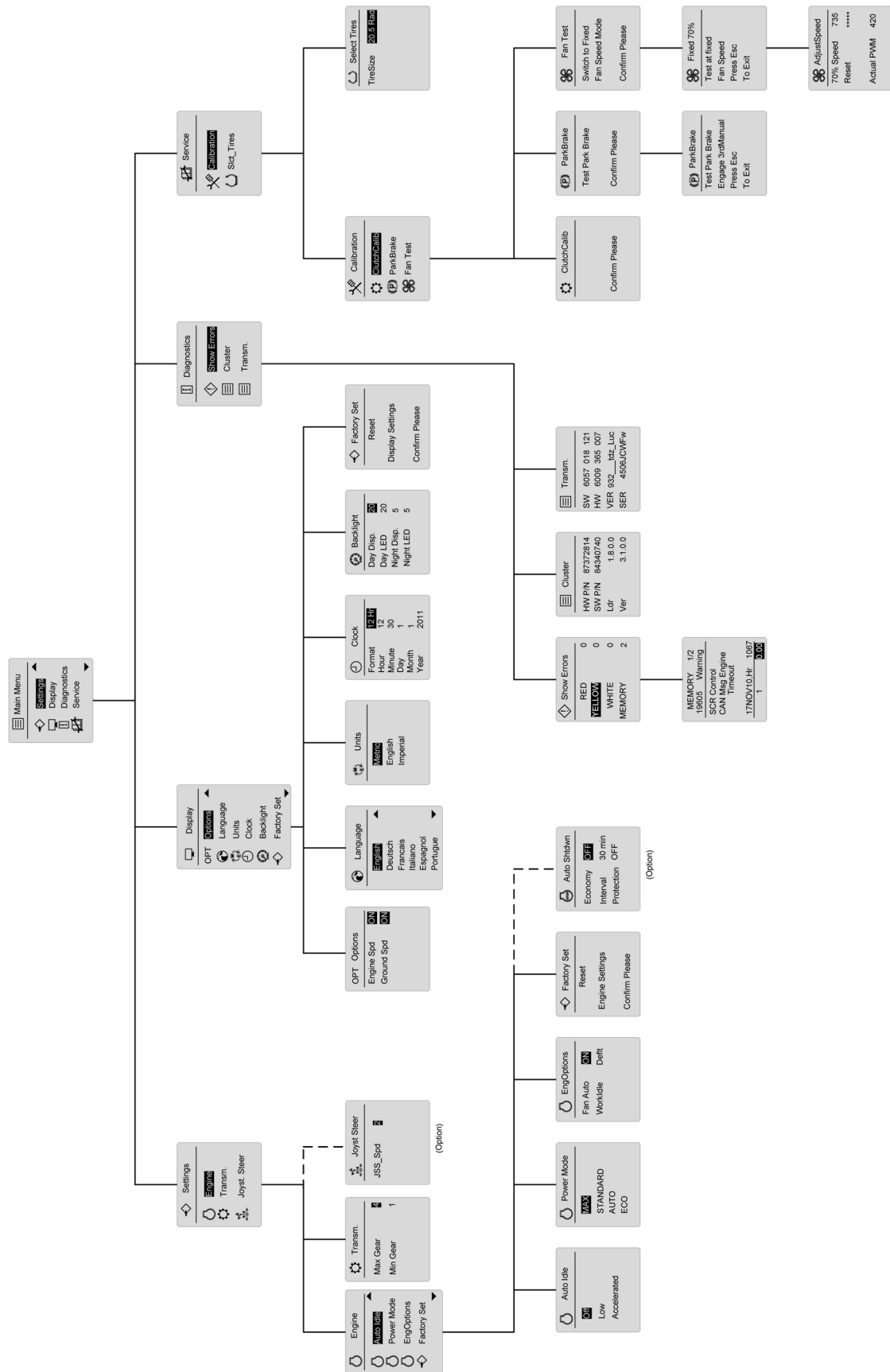
While ignition is ON and JSS is deactivated the software will check if the JSS Power Supply is off. Check JSS Output Control is low/open → if not a red error will be displayed "Short on JSS power supply JSS active".

Error Item	Location of Error Detection	Message
1812y	JSC	Open Circuit, Short to Battery or Short to Ground at JSS armrest switch.
1816y	JSC	Open Circuit / JSS activation switch mechanical defect.
1820y	JSC	Check JSS Relay, JSS Valve, JSS Joystick power supply connections.
1821r	JSC	Short to ground on JSS Relay 85/AIC1.21 or short to Power on Relay 86/87a. Or Activation Switch failure.
1823y	JSC	JSS RELAY, GROUND CONNECT., BAD ELEC. CONNCT. Permanent ground at JSS Relay (87) open circuit or short to power.
1824y	JSC	Short to battery at activation button. Activation switch failure.
1829y	JSC	Joystick Steering is not calibrated.
1830y	JSC	Open circuit between activation switch Pin 3 and C5.E Pin 1.
1831y	JSC	JSC CONTROLLER, WRONG OPERATION. JSC controller internal fault.
1832y	JSC	JSC CONTROLLER, JSC SIGNAL IN, OUT OF LIMITS. Input signal from JSS joystick to JSC controller out of limits. (Joystick Neutral: USignal>40%UBat + <60%UBat; Joystick Actuated: USignal>20%UBat + <80%UBat)
1833y	JSC	Output signal from JSC controller to valve out of limits. Check connector of JSS valve and JSC controller.
1834y	JSC	JSS CONTROLLER, JSC OUTPUT, SC to BAT Power is applied to one of the JSC controller outputs. Check electrical connection for short to power. Or JSC internal Relay is defect.
1835y	AIC	JSS-valve/Pin4 JSC/Pin5 short to power, short to ground or open circuit.
1836y	JSC	JSS CONTROLLER, BOARD TEMPERATURE, OUT OF LIMITS Temperature on the JSC board is <-40°C or >+85°C; Check ambient temperature or short circuit at JSC power outputs.
1837y	JSC	JSS CONTROLLER, SWITCHED POWER, OUT OF LIMITS Switched power supply at JSC Pin3 is out of limit; Check elect connection for electrical transients, burst or drifts.
1838y	JSC	Neutral Sw out of range.
1841y	JSC	JSS valve internal error, spool position not accurate or signal voltage out of range.
1842y	JSC	JSS valve Pin2 (alarm signal) open circuit.
1843y	JSC	Pilot pressure switch open when JSS is deactivated. High pilot pressure on JSS valve even when JSS is not active. Pilot Dump valve stuck close or short to power on valve power supply. Or open circuit on JSS pilot pressure switch lines or JSC/Pin8.
1844y	JSC	Pilot pressure switch short to ground.

3 - CONTROLS AND INSTRUMENTS

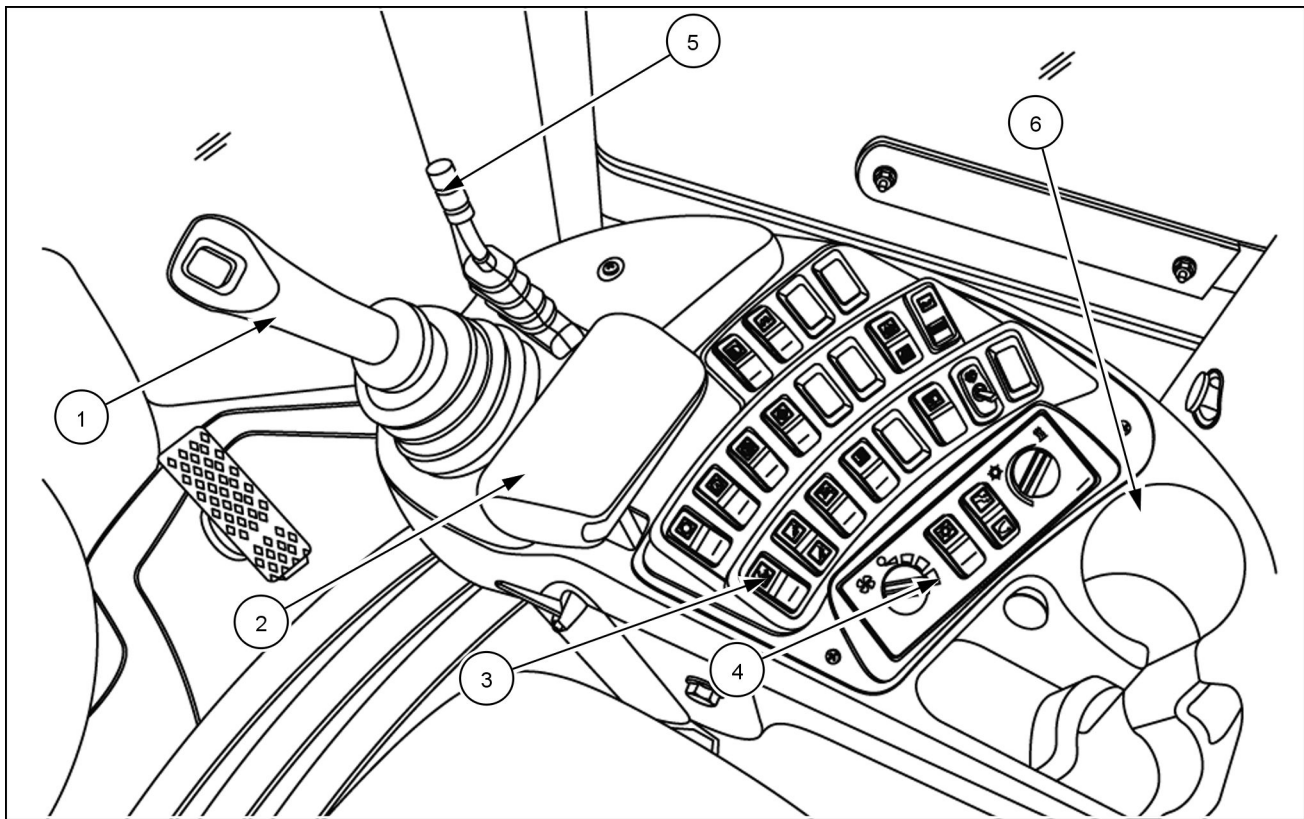
Error Item	Location of Error Detection	Message
1845y	JSC	Pilot pressure switch stays closed (Input JSC8 =1) although JSS is activated. With low pilot pressure on JSS valve no steering with JSS possible. Error is displayed when JSS active and Pilot pressure stays low. Pilot Dump valve stuck open or open circuit or short to ground on JSS valve power supply (Valve Connector Pin4). Or short to power on JSS pilot pressure switch lines or input JSC/Pin8.
1846y	JSC	Standard steering orbitro tank pressure transducer switch short to power or short to ground.
1847y	JSC	JSC Model type not available, no model type information available in JSC, probably missing information from AIC.
1850y	JSC	JSS joystick Pins2, 4 or 6 short to ground, short to battery or open circuit. Or JSS joystick internal failure.
1852y	JSC	JSS joystick Pins5 open circuit. Or JSS joystick internal failure.
1860y	JSC	CAN timeout of C5.E detected by JSC.
1861y	JSC	CAN timeout of AIC detected by JSC Controller.
1863y	AIC	Internal malfunction transmission controller. TCU message JSS F-N-R dissabled or JSS F-N-R not activated.
9128y	AIC	CAN timed out during operation.
9134y	AIC	CAN timed out during operation C5.E detected by AIC.
9135y	AIC	CAN timed out during operation JSC detected by AIC.

Software legend



SIDE CONSOLE

Overview [60631421]



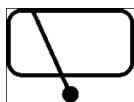
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- | | |
|---------------|----------------------|
| 1. Controller | 4. Climate control |
| 2. Wrist rest | 5. Auxiliary control |
| 3. Switches | 6. Cup holder |

The side console allows the operator to make adjustments to machine operation and functions. It also houses the climate control system.

Switch operations [60631538]

1. Rear wiper switch

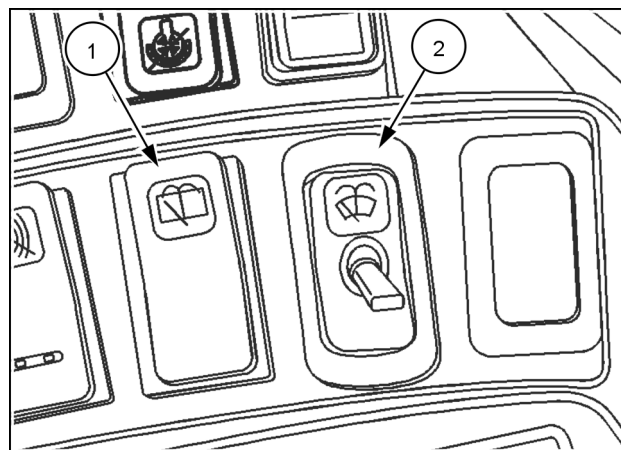


- A. Push switch to the center position for ON.
- B. Push on the front of switch for washer fluid.

2. Front wiper/washer switch



- A. OFF - Toggle switch is in the OFF position.
- B. INTERMITTENT - Push toggle to the first position. There are six settings for intermittent wiper speeds.
- C. LOW - Push toggle ahead until the wiper runs continuously for low wiper speed.
- D. HIGH - Push toggle ahead for high wiper speed.
- E. WASH - Push down on the front of the switch for washer fluid.



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3. Driving light switch

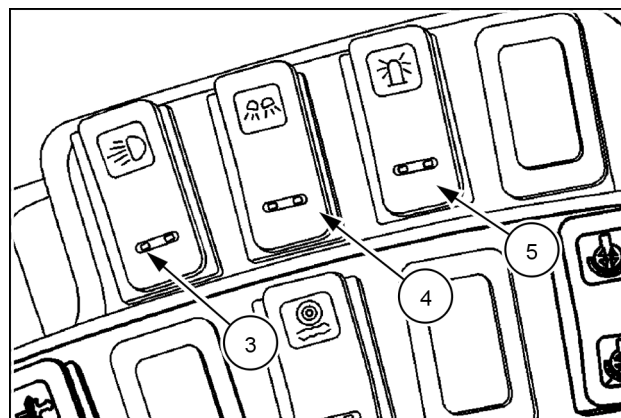


- Push on the top of the switch for roading machine. Pushing on the bottom of the switch will turn the lights OFF. The middle position is for marker/position lights.

4. Work light switch



- Push on the top of the switch for front and rear working lights. The middle position is for front work lights only. Pushing on the bottom of the switch will turn the lights OFF.

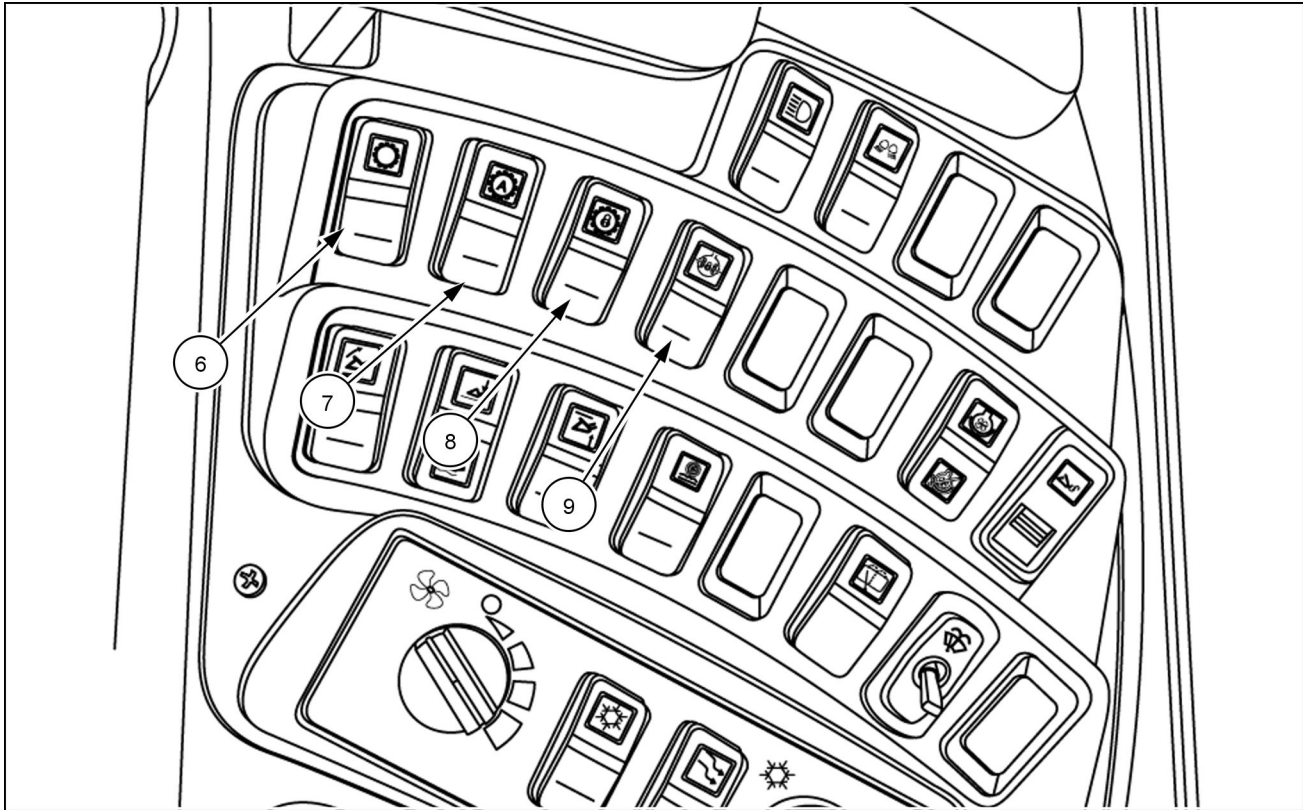


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5. Rotating beacon (optional)

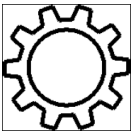


- Push on the top of the rotating beacon switch for the ON position. Push the switch bottom for the OFF position.



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6. Transmission enable switch



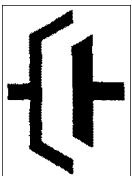
Use the transmission enable switch by pushing down on the top of the enable switch. The indicator light on the bottom of the enable switch will illuminate when activated. By following the correct sequence and enabling the auxiliary F-N-R the operator may select FORWARD-NEUTRAL-REVERSE from the loader control lever or the auxiliary F-N-R switch. See Chapter 4 - Operating Instructions for further information.

7. Auto shift switch



The auto shift switch is used to select the automatic or manual mode of operation for the transmission. When the auto shift switch is in the ON position, the transmission will automatically shift up and down between 1st or 2nd and the highest speed setting on the transmission lever.

8. Declutch switch (4-speed only)



Use the declutch pressure switch to adjust the clutch cut-off point. The switch controls the vehicle tractive effort using the brake pedal, independent of engine speed. This feature can improve loader applications when truck loading and tight corner operations are required.

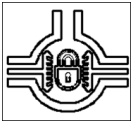
8. Torque converter lock-up switch (5-speed only)



This switch allows a direct mechanical connection between the engine and the transmission to eliminate torque converter loss. It allows the operator to remain locked up from second gear upward. This allows for faster vehicle accelerations and speeds.

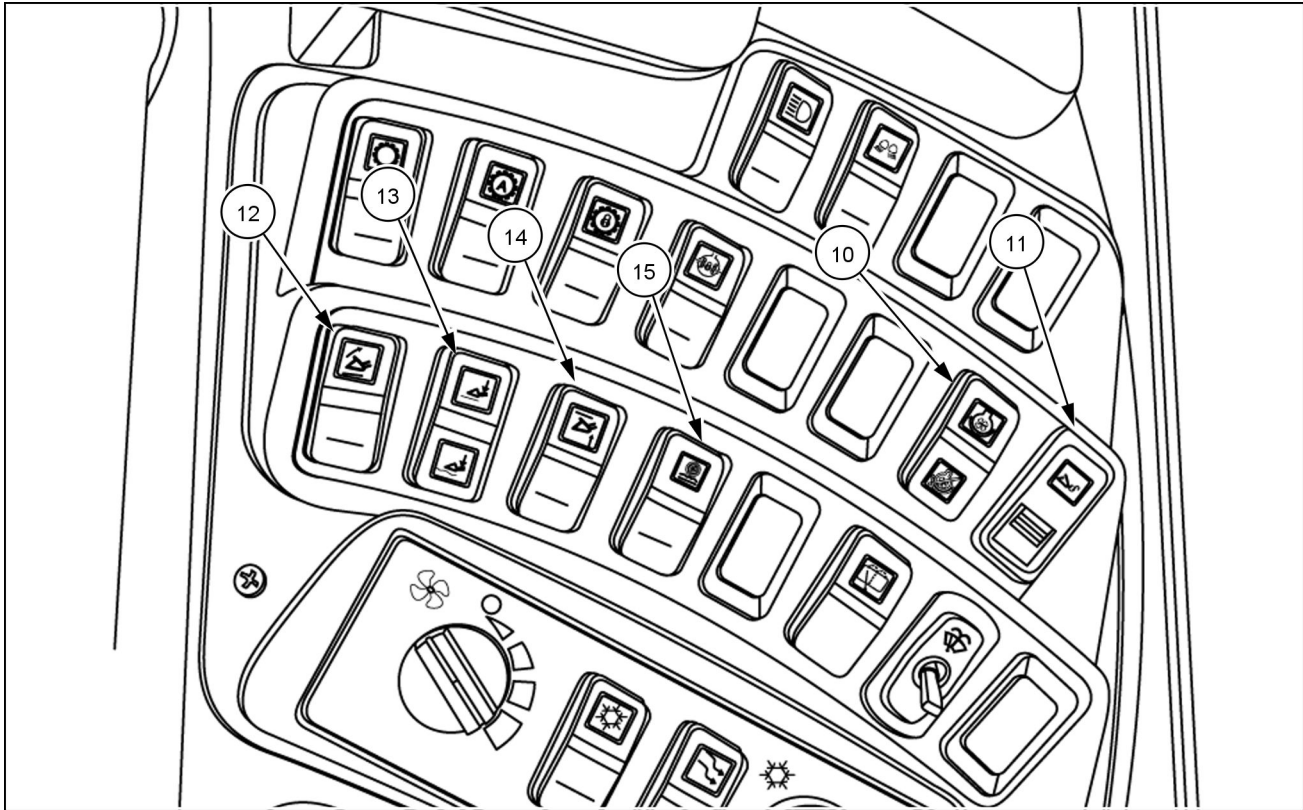
NOTE: Your machine will be equipped with either the declutch switch or the automatic differential switch depending upon if the machine has a 4-speed or 5-speed transmission.

9. Automatic differential lock switch (if equipped)



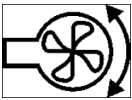
With the switch in the ON position, the automatic differential lock system is enabled. The hydraulic differential lock will automatically engage when required for the wheel loader.

The differential lock is activated any time the differential lock foot switch is pressed, regardless of whether the automatic differential lock system is enabled or not.



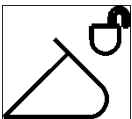
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10. Fan reverse switch (if equipped)



To use the fan reverser let the machine idle in neutral. Depress the fan reverser switch and depress the throttle to high idle for a minimum of 10 seconds or until debris stops blowing out of the coolers. Return the machine to idle and release the fan reverser switch. This is a three-position switch. Push the upper part of the switch for momentary reversal as described above. The center position of the switch is the automatic position, and the lower position disables the automatic fan.

11. Coupler engagement switch (if equipped)



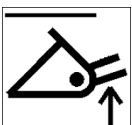
This switch allows engagement of the attachment from the operator's compartment. Slide the locking plate toward the center of the switch. Push down on the top of the switch to retract pins for the attachment. The switch lamp will illuminate when the pins have been retracted. The switch will lock the pin in the extended position when the bottom of the switch has been pressed and the pins are extended.

12. Return to dig switch



Push on the top of the function switch for the ON position. This will allow the bucket to return to level with the ground for digging.

13. Return to travel detent switch



The return-to-travel switch is used to automatically return the loader bucket to the travel position after you have dumped the loader bucket. Push down on the top of the return-to-travel switch to engage the return to travel detent. Push the bottom of the switch for the float detent position.

14. Height control switch



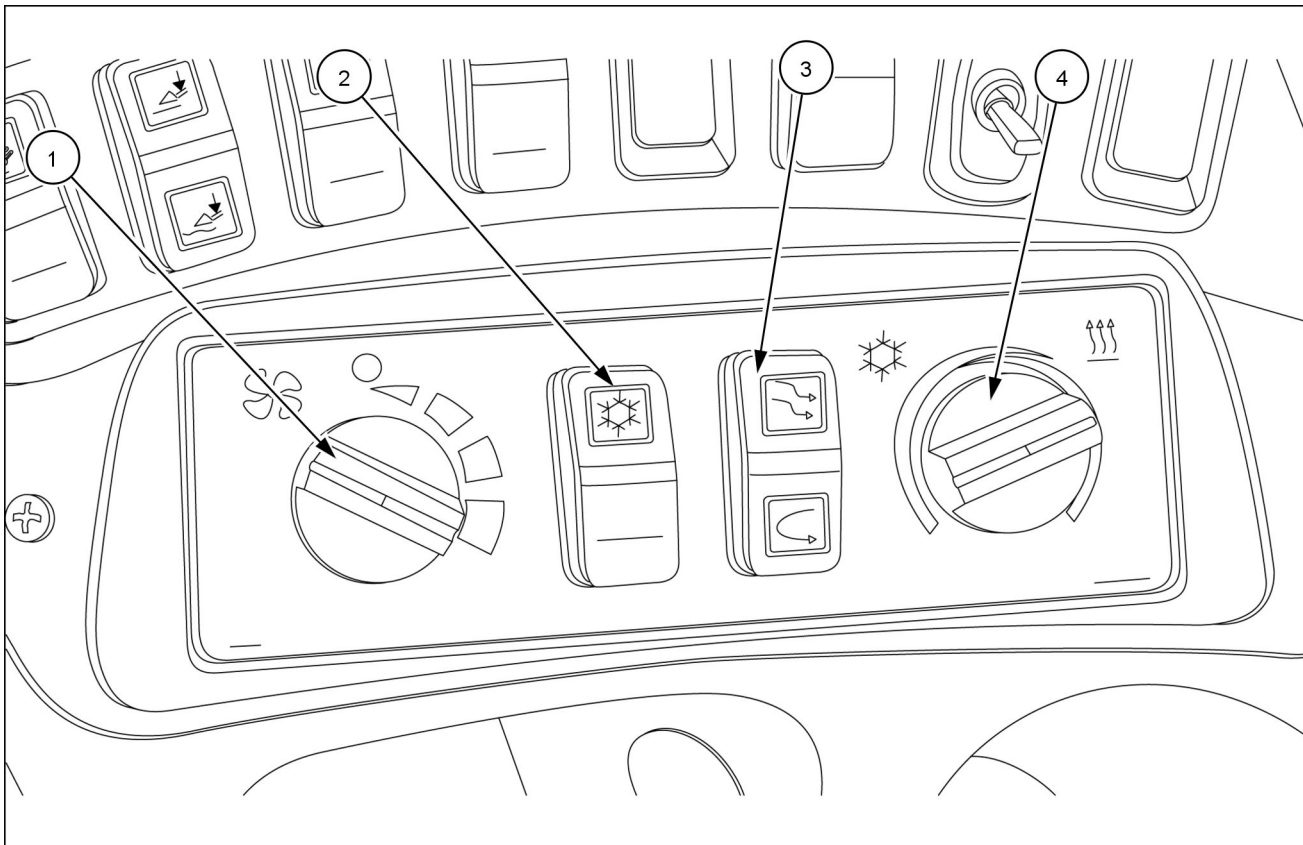
Push on the top of the function switch for the ON position. This will allow the bucket to be raised to set height position when activated.

15. Load Travel Stabilizer (if equipped)



This is a 3-position switch. Push on the top of the switch for the manual ON position. Load travel stabilizer can be left on at all times, whether loading or roading. The center position is the automatic and most commonly used position. In the automatic position, the load travel stabilizer will automatically activate when ground speed is above **5 km/h (3.1 mph)** and automatically shut off when ground speed is below **5 km/h (3.1 mph)**. The indicator light on the switch will illuminate when the load travel stabilizer is activated. To turn the function off, push on the bottom of the switch for the OFF position.

Climate controls [60631623]



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1. Fan



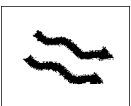
Turn the control clockwise for higher fan speed. and adjust the control to the desired speed. The blower fan switch has five positions: OFF, 1, 2, 3, and 4. Turn the switch to 4 for maximum speed and to 1 for the lowest speed. Turn completely counterclockwise for OFF.

2. Air conditioning control (if equipped)



Push on the snowflake switch to turn the air conditioning function ON. When the air conditioner is ON, the snowflake will illuminate. Turn the control to adjust the control to the desired temperature. Blue markings indicate cooler temperatures.

3. Recirculation switch



Press the recirculation switch to bring in fresh air or use in conjunction with the climate control to adjust air flow.

4. Climate control adjustment

Turn the control clockwise, and adjust the control to the desired temperature. Blue markings indicate cooler temperatures. Red markings indicate warmer temperatures when using the heater. Heater and air conditioning switches turn the functions on and off.

NOTE: Make sure the water inlet for the heater is in the full ON position. This inlet is located in the left rear of the engine compartment.

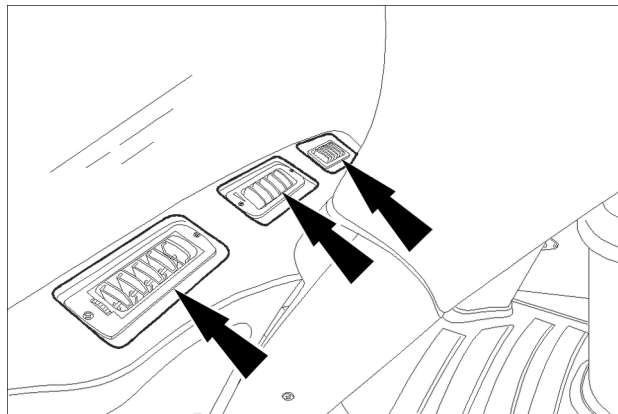
NOTE: During some conditions, it is possible to have ice on the air conditioning core. Ice can be caused by operating at the maximum cold setting of the air conditioning control with the blower speed at low. It is best to operate air conditioning at the center range of the temperature control with the blower speed at medium or high. If ice does block the core, you will feel a reduction of air flow in the cab. Close the recirculation grille, turn the temperature control to off and run the blower at high speed. Another cause of ice can be a restricted air filter in the cab.

CLIMATE CONTROLS

Cab air louvers [60631672]

Main air louvers

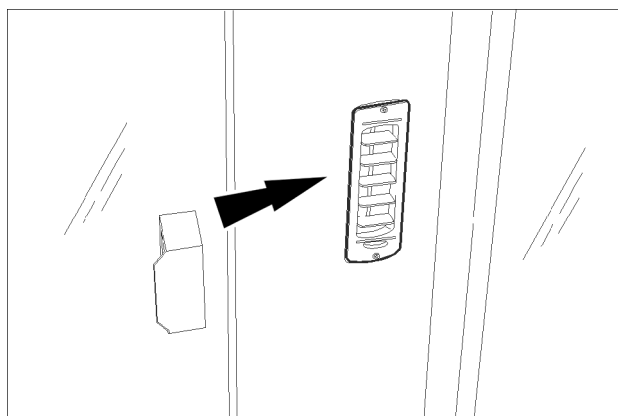
The louvers on the console direct air flow toward the operator or toward the front window.



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Louvers on the right and left hand cab supports direct air toward the operator.

Adjustments can be made to direct the air flow of the louvers.



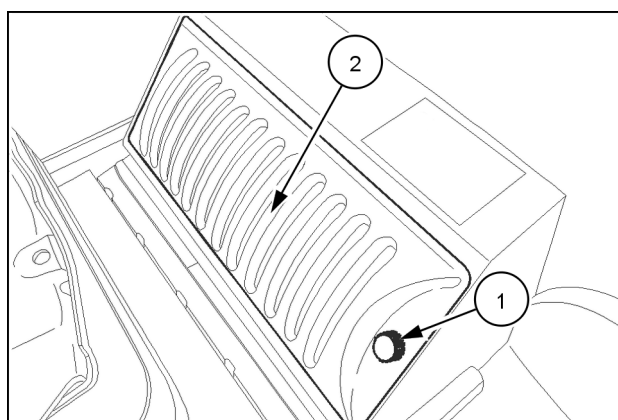
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Recirculation air louver

The recirculation air louvers are behind the operator's seat next to the floor. When open, air is recirculated in the cab.

NOTE: Always have these louvers open for maximum cooling with the air conditioning or maximum heat with the heater.

Loosen knob (1) and remove cover to access recirculation filter (2).



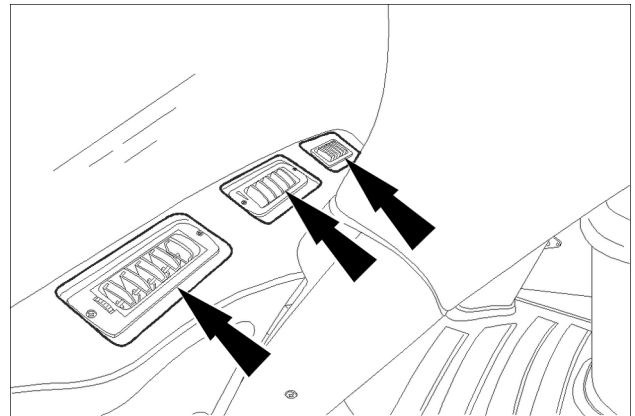
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Defrost air louvers

The upper louvers under the front windshield on the console and the louvers on the cab supports direct the air flow to defrost the windows. Additional louvers are located on the cab support posts.

To get maximum air flow on the windows, close all other louvers and turn the blower fan to the highest speed.

If a fogging condition occurs, make sure the recirculation air louvers are CLOSED. If equipped with air conditioning, turn the air conditioning ON and turn the heat control completely clockwise.



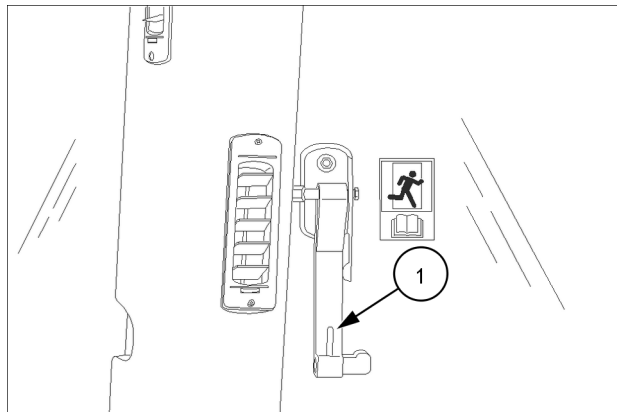
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Windows [60631719]

Window latch

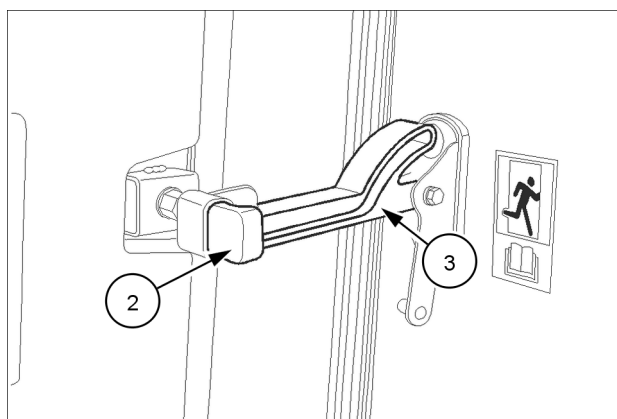
The window can be kept partially open by lifting the hold latch and sliding it on the latch pin until the hold latch locks in the latch pin.

The window may be opened and locked against the side of the cab. To open and lock the window, pull the hold latch toward the rear of the cab when the window is partially open. This will unlatch the window and allow the window to swing back against the cab and lock in place.



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1. Lift to open

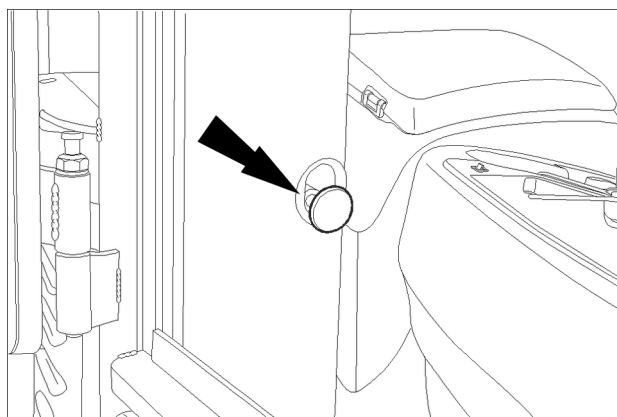


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2. Latch pin

3. Hold latch

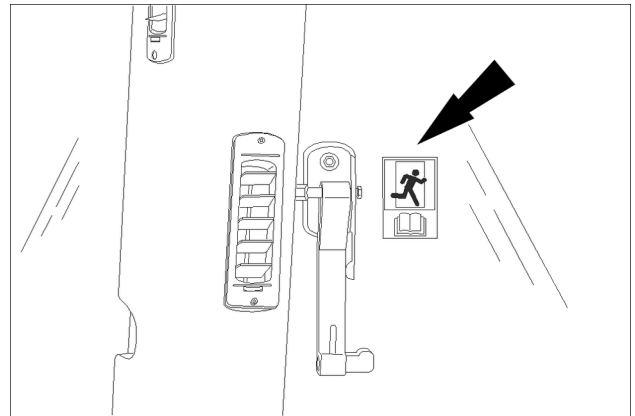
To release the window from the full open position, pull on the window release in the right hand rear corner of the cab.



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Emergency exit

The right hand window of the cab can be used as an emergency exit. Be proactive and open and close the emergency window exit as a safety measure to become familiar with its operation.



RCPH10WHL143BAL 4

4 - OPERATING INSTRUCTIONS

COMMISSIONING THE UNIT

Before starting the engine [60631877]

⚠ WARNING

IMPROPER OPERATION OF THIS MACHINE CAN CAUSE DEATH OR SERIOUS INJURY.

MAKE SURE THAT EVERY OPERATOR:

- is instructed in the safe and proper use of this machine.
 - reads and understands the operator's manual for this machine.
 - reads and understands ALL safety signs on the machine.
- Failure to comply could result in death or serious injury.

W0188A

⚠ WARNING

Avoid injury!

Do not operate the machine while under the influence of alcohol or drugs.

Failure to comply could result in death or serious injury.

W0160A

Before starting the engine

1. Perform a daily walk around and visual inspection of the machine. Check for loose connections, faulty hoses, oil leaks, debris or trash buildup, loose bolts, damaged, or missing parts that could effect the normal and safe operation of the machine. Make any necessary corrections before operating the machine.
2. See the quick reference Maintenance Chart in this manual and complete the items in the daily - 10 hour section of the chart.
3. Check that the machine fuel tank is filled with clean fuel that matches the specifications given in this manual.

Run in period of a new machine [60631927]

Your machine will last longer, give better and more economical performance, if you pay particular attention to the engine during the initial run-in period. (See the maintenance chart in Chapter 7 for further information.)

During this period:

- Warm up the engine before using it under load.
- Do not operate the engine at maximum power for prolonged periods of time.
- Do not run the engine for a long period at idle speed.

- Frequently check the instruments on the instrument panel.
- Check the oil levels and coolant level frequently.
- During the run-in period, the following checks and servicing operations should be carried out in addition to those specified in the service schedule:

NOTICE: *For turbocharged engines, only shut the engine down from the low idle position to prevent damage to the turbocharger.*

STARTING THE UNIT

Starting the engine [60631978]

WARNING

IMPROPER OPERATION OF THIS MACHINE CAN CAUSE DEATH OR SERIOUS INJURY.

MAKE SURE THAT EVERY OPERATOR:

-is instructed in the safe and proper use of this machine.

-reads and understands the operator's manual for this machine.

-reads and understands ALL safety signs on the machine.

Failure to comply could result in death or serious injury.

W0188A

Before operating the machine

Before operating this machine, complete the following procedures:

1. Carry out the daily maintenance operations.
2. Inspect the machine, look for any signs of possible leakage and check the hoses. Tighten or replace as necessary.
3. See run-in period if the machine is new or if the engine has been reconditioned.
4. Check the tires for any visible damage. Replace or repair as necessary. Check for correct tire air pressure and adjust pressure if necessary.
5. Clean the steps and hand holds. Grease, oil, mud, or ice in winter on the steps and access handles can cause accidents. Make sure they are kept clean at all times.
6. Clean or replace any decals which are illegible. See Decals in Chapter 2.
7. Make sure that the engine access panels and all doors are properly closed and latched.
8. Secure the cab door in either fully closed or fully opened position.
9. Remove any obstructions which hinder visibility. Clean the windshield, the windows and the rear view mirrors.
10. Check that no tools or other items have been left on the machine or in the operator's compartment.
11. Make sure no one is on or under the machine. The operator must be alone on the machine.
12. Make sure no one is standing in the machine working area.
13. Find out about current safety measures in use on the work site.
14. Work out a convenient means of escape from the machine (emergency exit via the windshield, the rear or side window glass) in the event of the cab door being jammed or the machine turning over.
15. Before undertaking any travel or working operations during hours of darkness, make sure the lighting and signaling equipment is fully operative.
16. Adjust the seat so that you can apply the foot brakes when your back is against the seat backrest.
17. Fasten and adjust the seat belt.
18. With the engine running and at operating temperature, check the instrument panel for correct indications.
19. Check the loader controls for correct operation.

Starting the engine

WARNING

Equipment failure could cause accident or injury!

Before operating the machine, check for correct operation of steering, brakes, hydraulic controls, instruments, and safety equipment. Make sure the transmission control lever is in the neutral position. Make all adjustments before operating the machine.

Failure to comply could result in death or serious injury.

W0204A

NOTICE: Running the engine at idle for an extended time (6 hours maximum) is not recommended. After an extended idle period, operate the machine under load for a minimum of 30 minutes.

NOTE: If the machine has been out of use for some time, see *Starting Up After Storage* in this chapter.

NOTE: If you need to start the engine using a booster battery, see *Auxiliary battery connections* in Chapter 7.

1. Turn the master disconnect switch to the ON position.
2. Take up the correct position in the operator's seat with the seat belt correctly fastened. Make sure you can push the foot pedals completely down with your back against the seat cushion.
3. Make certain the transmission direction control is in NEUTRAL and the parking brake is applied.
4. Turn the key switch to the ON position and check the instrument indicators.

5. Keep all non-authorized personnel clear of the area. Sound the horn to alert others of your intent to start the engine. Turn the key switch to the START position until the engine starts, then release the key.

NOTICE: The starter has an automatic cut out to protect itself. In cold weather conditions, extended cranking may be necessary.

6. After the engine starts, check the instruments to make sure the indications are correct. Run the engine at low idle with the transmission in neutral until the engine coolant temperature is warm.

NOTICE: Operate the machine at reduced loads until all systems reach operating temperature. This is very important during extremely cold weather operation to protect both the engine and hydraulic systems.

Engine speed

DO NOT OPERATE the engine at idle speed for long periods. This can cause a low operating temperature. A low operating temperature can cause acids and deposits in the engine oil.

Run the engine at low idle for a minute at start up before picking up speed and load.

Always bring the engine to low idle for a few minutes to let all parts cool evenly before shut down.

NOTICE: Always shut the engine down from the lowest idle to prevent damage to the turbocharger.

Operating in extreme temperatures [60632019]

Operating the machine in hot climates

1. Keep the coolant at the correct level in the coolant reservoir and in the radiator.
2. Use the correct solution of ethylene glycol and water in the cooling system.
3. Check the cooling system cap before hot weather starts. Replace the cap as required. Replace with a genuine replacement part to insure the correct PSI rated cap.
4. Clean all dirt and debris from the radiator, cooler, and engine area.
5. Check the condition of the engine accessory drive belt.
6. Use lubricants of the correct viscosity. See fluids and lubricants in Chapter 7 — Maintenance.

Cold temperature operation [60632068]

Operating in cold climate conditions

WARNING

Hazard to bystanders!

Make sure the area surrounding the machine is clear of all persons before starting the engine. Failure to comply could result in death or serious injury.

W0090A

WARNING

Equipment failure could cause accident or injury!

Before operating the machine, check for correct operation of steering, brakes, hydraulic controls, instruments, and safety equipment. Make sure the transmission control lever is in the neutral position. Make all adjustments before operating the machine.

Failure to comply could result in death or serious injury.

W0204A

NOTICE: Running the engine at idle for an extended time (6 hours maximum) is not recommended. After an extended idle period, operate machine under load for a minimum of 30 minutes.

Cold weather conditions require special operating procedures. During these conditions your machine will require special start up, warm up and maintenance procedures for the best performance. Proper cold weather maintenance will extend the service life of your machine.

Batteries

Clean the batteries and make sure they are at full charge. In cold conditions it is important to run the machine long enough to return the charge lost by starting. In most cold conditions this is about ten minutes, but in extreme cold it can be 30 minutes.

NOTE: A fully charged battery at **-17 °C (1.4 °F)** has only **40 %** of the normal starting power. At **-29 °C (-20.2 °F)** the battery has only **18 %**.

Inspect the battery cables and terminals. Clean the terminals and apply electrical terminal sealers to prevent corrosion. See your dealer.

If water is added to the batteries and the temperature is below **0 °C (32.0 °F)**, charge the batteries or run the engine for approximately 2 hours. This will prevent battery freezing.

Lubricants

Follow the recommended oil and filter service for the engine and hydraulic system as shown in this manual. Use the correct viscosity oil in each component for the ambient temperatures the machine is operating in. For extreme cold conditions, contact your dealer for alternative lubricants for the hydraulic and transmission systems.

Fuel

Check with your fuel supplier for the correct cold weather fuel. Engine power will be reduced if wax particles are in the fuel filters. Some cold weather fuel blends result in lower engine power.

Check for water in the fuel system. Cold temperatures can cause condensation to form in the fuel tank. Check and drain the fuel prefilter and fuel tank for water as required.

Cooling system

Check the coolant mixture before operating in cold temperatures. A mixture of **50 %** ethylene glycol and **50 %** water must be used. This mixture is used if the lowest ambient temperature is **-37 °C (-34 °F)**. If the ambient temperature is lower, adjust the mixture. It is recommended that ethylene glycol and water be used in the machine all year long.

Cold temperature starting aids

WARNING

Explosion hazard!

DO NOT use ether starting fluid. Serious engine damage, explosion, death, or serious personal injury could occur.

Failure to comply could result in death or serious injury.

W0148A

This machine may be equipped with engine grid heater. Turn the key switch to ON and wait for the engine grid heater indicator lamp to go out. The indicator light may come on again during cranking and shortly after the engine starts for post heating. This allows for smooth running conditions during cold weather warm up. Contact your dealer for additional cold weather starting aids.

Machine warm up

During this period:

- Once the engine has started, run the engine at about half throttle (**1100 RPM** to **1300 RPM**) for a minimum of four minutes under no load. This will help stabilize the engine.
- After engine warm up, enable the pilot control by pushing down on the control knob just to the rear of the loader control levers. At this time, place the lift arm into float and the bucket into roll back to load the engine in order to heat the hydraulic oil. Hold for approximately two minutes. Apply and hold the foot brake, cycle the lift arm and bucket. Repeat the float/roll back heating procedure again for approximately two minutes. Raise the lift arms enough to steer the unit full left and right to warm the oil in the steering cylinders. In extreme cold conditions, hold the float/roll back condition for five minutes maximum.
- Even with the correct oil in the hydraulic/brake system, the first few times the brakes are actuated there may be some delay before the brakes are applied. The operator must actuate the brake pedal a minimum of 8 to 10 times before the machine is moved to obtain proper heating. Actuating and releasing the brakes should occur in a cycle of 3 seconds full on and 3 seconds off to obtain exchange of the brake oil.

- In extreme cold weather conditions, the brake response can be slow. The use of correct oil in the hydraulic/brake system is required in persistently severe applications. Contact your dealer for the correct oil.
- When the machine has been correctly warmed up, apply the foot brake and hold, shift the transmission to forward, push the park brake to OFF position and release the foot brake. Operate the machine in a clear safe area. Check the full operation of the machine.

NOTICE: *DO NOT operate the machine on the road until the transmission oil and axle oil have been correctly warmed up. Operate the machine in a clear safe area before road operation in first and second gear only.*

- If the machine has been left idling in cold temperature, the engine will stay warm, but the hydraulic/brake oil and the axle oil will not stay warm. The oil and components can become cold and slow brake function response time. If this should happen you **MUST** go through the complete warm up procedure.

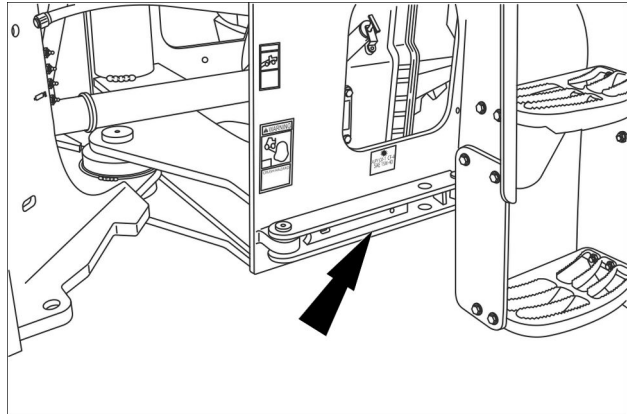
NOTE: *The transmission is equipped with internal protection that does not allow the transmission to engage if the oil temperature is below -12 °C (10 °F). If the transmission does not engage, allow 2 to 4 minutes of running in neutral and try again.*

Transport/service link [60632109]

Operating the machine

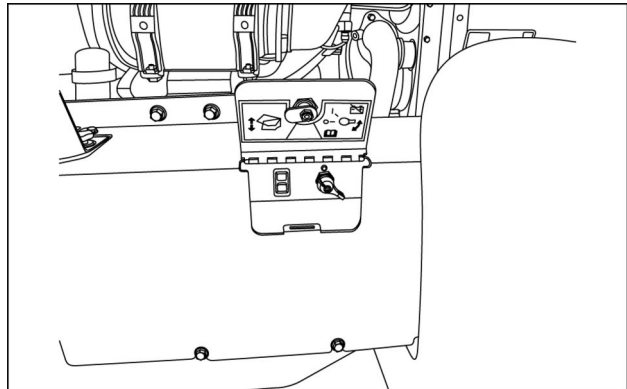
Starting and stopping the loader

1. Remove the transport/service link from the lock position, and secure it in the work position.



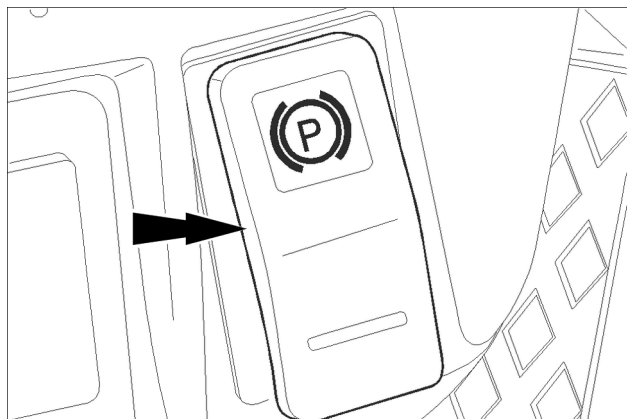
RCPH10WHL062BAL 1

2. Place the master disconnect into the ON position, as shown.



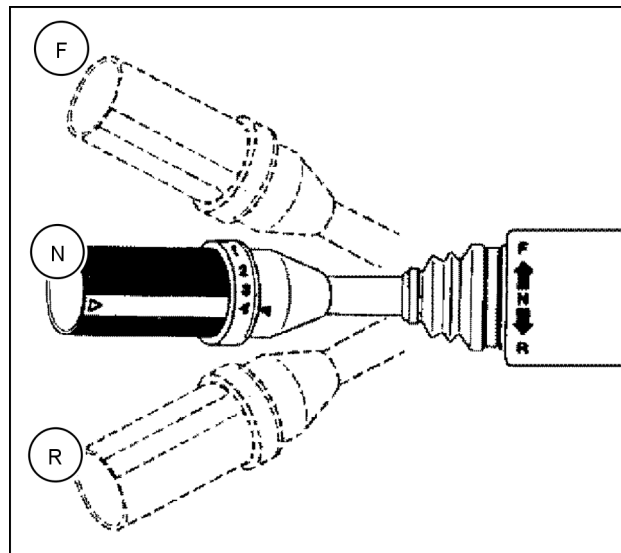
RCPH10WHL106AAH 2

4. Sit in the operator's seat with the seat belt correctly fastened. Make sure you can push the foot pedals completely down with your back against the seat cushion. Confirm that the parking brake switch is ON (Brake Engaged). Keep all non-authorized personnel clear of the area.



RCPH10WHL028BAL 3

5. The gearshift lever must be in NEUTRAL.

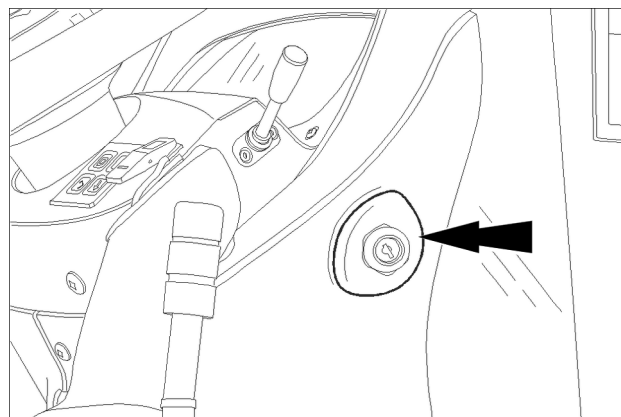


RCIL10WHL193BAL 4

6. Make certain the area is clear of all non-authorized personnel. Sound the horn to warn those around the work area of your intentions.
7. Insert the key into the ignition switch and turn it into ON position. Monitor the console indicators. Do not attempt to start the engine until the grid heater light is out. When the grid heater light is no longer illuminated, turn the key to the START position. Once the engine starts, allow it to run at low idle until the engine coolant temperature is warm.

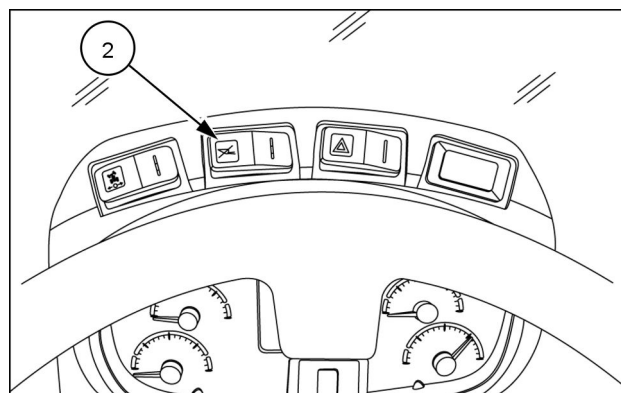
NOTE: If the engine starts and then stops, do not engage the starter motor again until the starter motor stops turning. Let the motor cool for two minutes before cranking again.

NOTICE: The starter has an automatic cut out to protect itself. In cold weather conditions, extended cranking may be necessary.



RCPH10WHL114BAL 5

8. Push the pilot control lock out (2) down, to power the equipment.
9. Raise the loader arms so that the equipment is raised approximately **380 mm (15 in)**.
10. To move the machine:
- Cycle the parking brake switch
 - Place the gearshift into forward position
 - Release the foot brake and accelerate smoothly

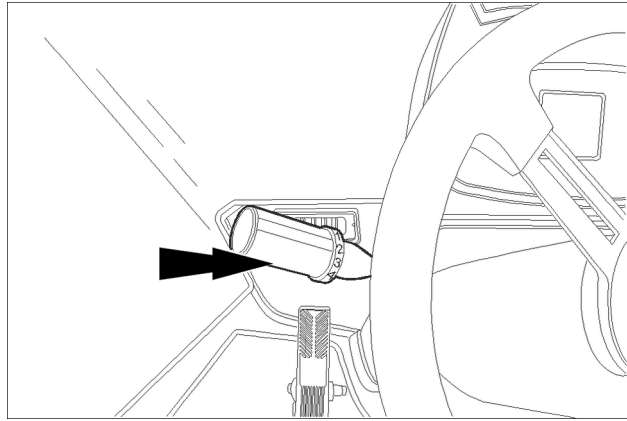


RCPH10WHL499AAH 6

11. To shift gears manually:

Use the transmission control lever to shift the transmission gears from first through fourth gear. Turn the transmission control lever away from you to select a higher gear. Turn the lever toward you to select a lower gear. This control lever is also used to put the transmission in FORWARD, NEUTRAL, and REVERSE.

- A. Move the control lever away from you for FORWARD.
- B. The center position of the control lever is NEUTRAL.
- C. Move the control lever toward you for REVERSE.



RCPH10WHL116BAL 7

STOPPING THE UNIT

Stopping the engine [60851281]

⚠ WARNING

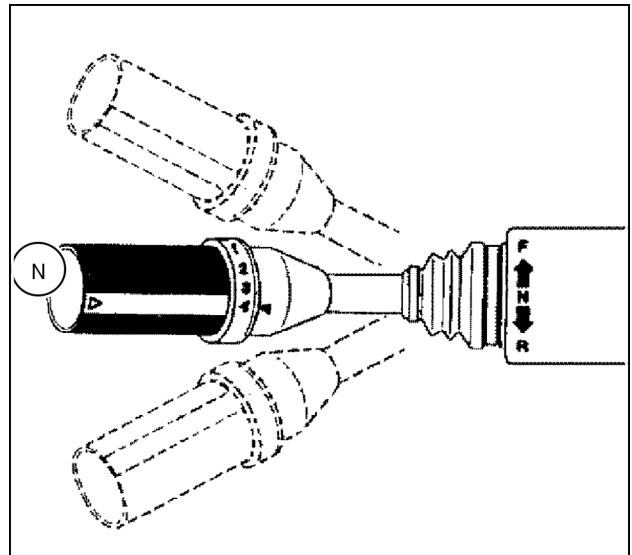
Unexpected movement!

**Always engage the parking brake and switch off the engine before exiting the machine.
Failure to comply could result in death or serious injury.**

W0209A

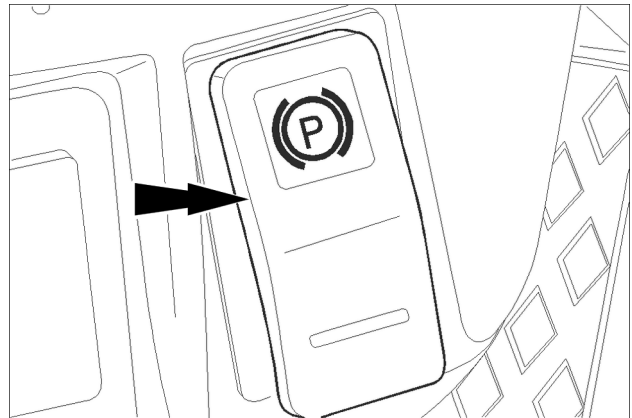
1. Stop the machine on hard, level ground and place the gearshift selector in NEUTRAL.

NOTICE: If you must temporarily park the machine on a hillside, put the front of the machine toward the bottom of the hill. Make sure the machine is behind an object that will not move.



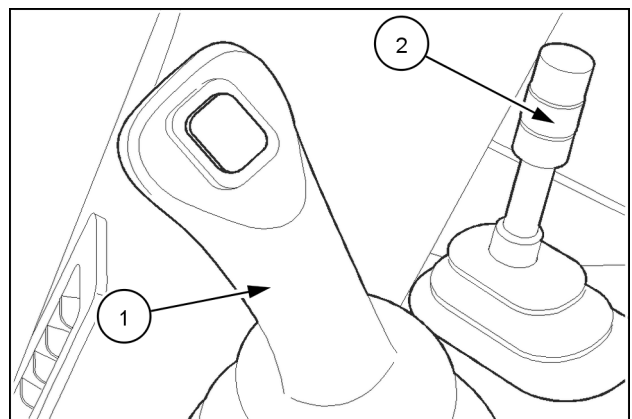
RCIL10WHL193BAL 1

2. Slowly move the equipment control levers forward to rest the equipment on the ground.
3. Push the parking brake switch to the ON position. Turn the engine off.



RCPH10WHL028BAL 2

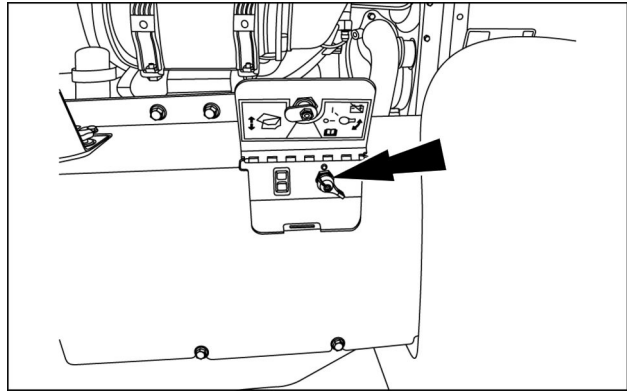
4. Slowly move the equipment levers through all rotations to insure that residual pressures in the hydraulic system are released.



RCPH10WHL119BAL 3

4 - OPERATING INSTRUCTIONS

5. After a minimum of 90 seconds following key off, turn the master disconnect switch to OFF, close and lock the compartment.

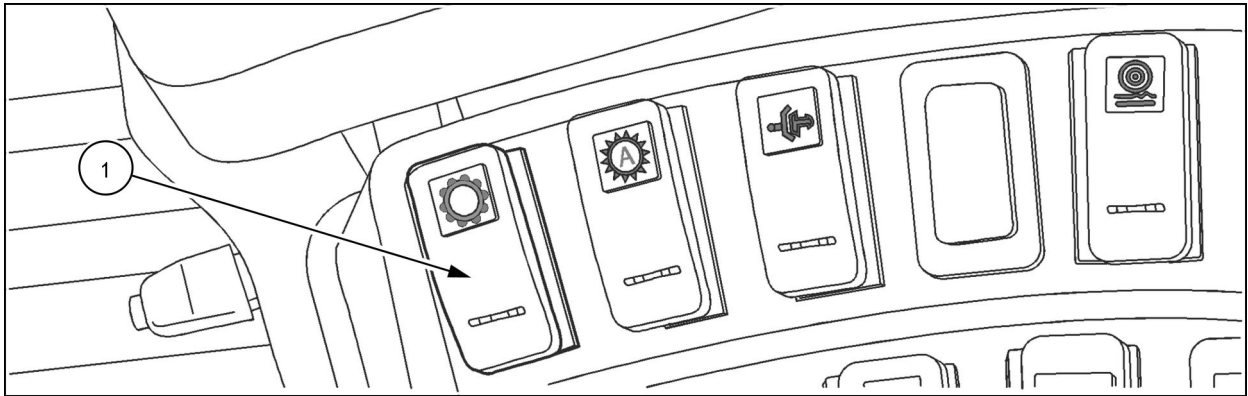


RCPH10WHL106AAH 4

MOVING THE UNIT

Before operating the transmission [60632507]

Transmission enable switch



The transmission enable switch can be enabled after the following conditions have been completed:

1. Transmission controller is in neutral (left side).
2. F-N-R switch is in neutral (right side).
3. The engine must be running.
4. Machine is stationary.
5. Parking brake is released.

Depressing the transmission enable switch allows the transmission to be controlled by the auxiliary F-N-R switch. The indicator light on the bottom of the enable switch will illuminate when activated (see note).

If the column mounted transmission controller is moved from neutral, the engine is stopped or the parking brake is applied, the auxiliary F-N-R mode is deactivated and transmission control defaults back to the transmission control lever.

NOTE: Within 8 seconds from depressing the transmission enable switch the following actions must take place or the F-N-R enable switch must be reactivated.

1. The parking brake switch must be released.
2. Shift to forward or reverse from the neutral position on the F-N-R switch.

Ride control [60632559]



Ride control is an optional feature that increases the ride comfort of the wheel loader over all types of terrain with either an empty or loaded bucket. It allows faster speeds during operation, resulting in increased productivity and operator comfort. It will also reduce shock loads to the wheel loader for reduced tire flex, structural fatigue and vibration, resulting in longer component life and reduced costs. Ride control will reduce fore and aft pitching motion during travel to allow faster speeds in load and carry applications.

The machine is equipped with a 3-position ride control switch (manual, auto, and off). Most commonly, the operator will choose to leave this switch in the automatic (center) position. With ride control active, the green indicator light will illuminate anytime the machine is traveling faster than **5 km/h (3.1 mph)** indicating that the ride control is functioning. Ride control will disengage automatically at slower speeds for loading and unloading. Ride control can be left ON at all times, whether loading or roading.

To turn ride control OFF, push on the bottom of function switch for the OFF position.

The top position of the switch turns ride control on in the manual position.

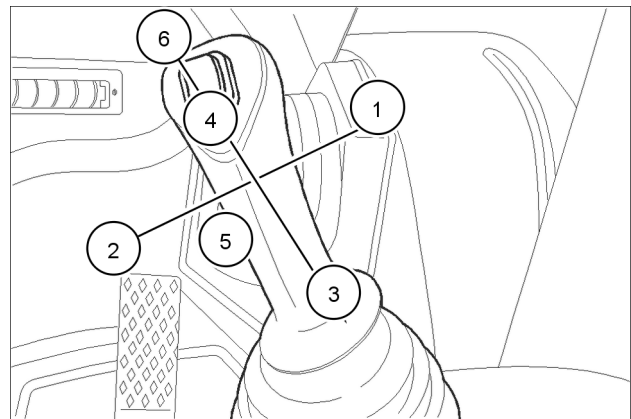
NOTE: Ride control should be OFF when the bucket is used in fine grading operations or when precision placement of a load suspended from the bucket or other attachment is required.

Control levers [60632679]

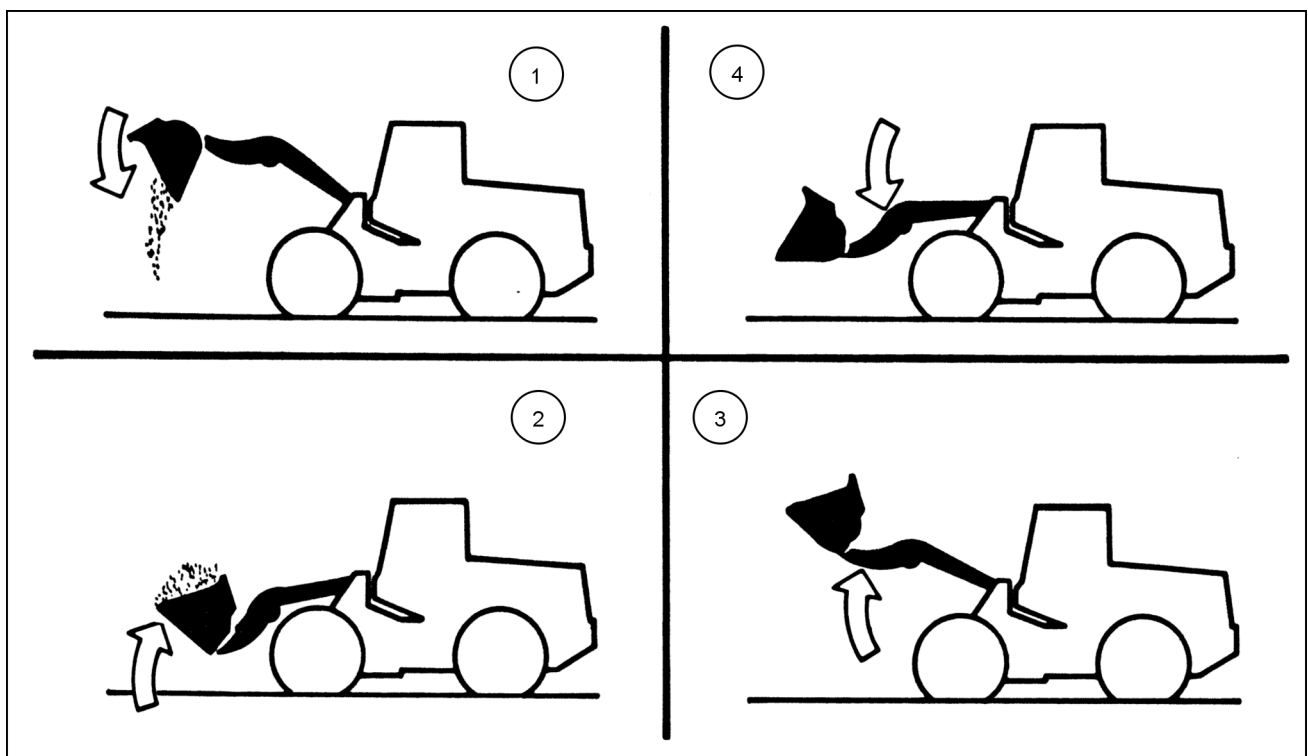
Two function valve - one control lever

NOTE: This page shows the basic loader control lever positions.

See loader function switches in this manual for return-to-dig, bucket height control and return-to-travel/float switches.



RCPH10WHL121BAL 1



RCPH10WHL045BAH 2

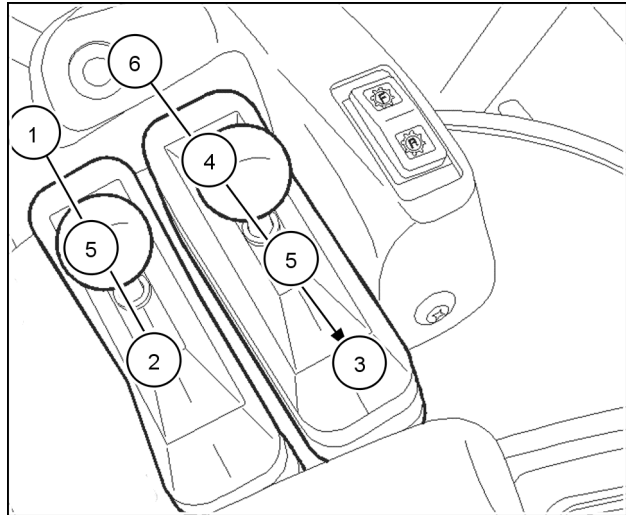
1. Dump bucket
2. Rollback bucket
3. Raise lift arms
4. Lower lift arms
5. Hold - The loader arms and bucket will not move when the control lever is in the hold position. When re-

- leased, the control lever must be manually moved from the float position to the hold position. (only with magnets engaged.)
6. Float (detent) - This is a detent position. When in the float (detent) position, the loader bucket can follow level of the ground without movement of the control lever. (only with magnets engaged.)

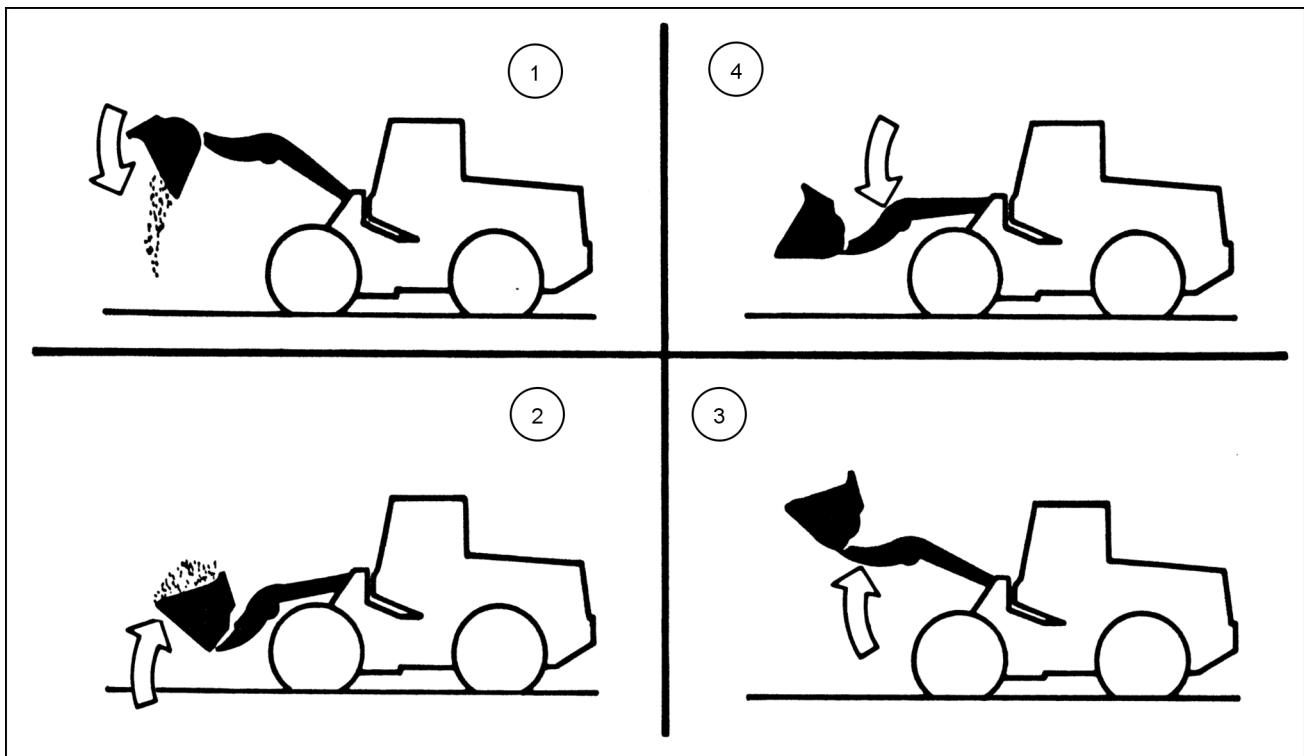
Two function valve - two control levers

NOTE: This page shows the basic loader control lever positions. The Detent Switch is in the Hold position.

See loader function switches in this manual for return-to-dig, bucket height control and return-to-travel/float switches.



RCIL10WHL190BAL 3



RCPH10WHL045BAH 4

1. Dump bucket
2. Rollback bucket
3. Raise lift arms
4. Lower lift arms
5. Hold - The loader arms and bucket will not move when the control lever is in the hold position. When re-

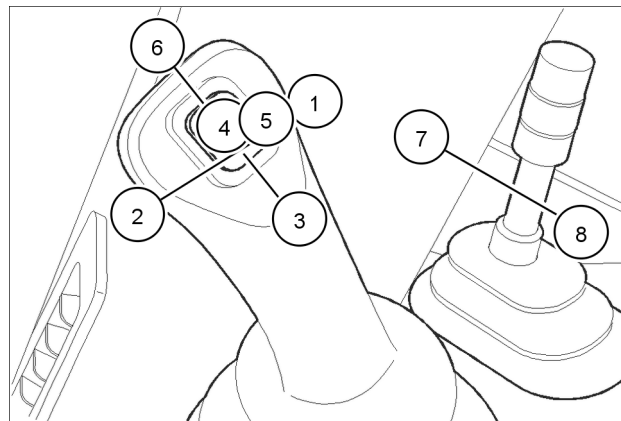
leased, the control lever must be manually moved from the float position to the hold position. (only with magnets engaged.)

6. Float (detent) - This is a detent position. When in the float (detent) position, the loader bucket can follow level of the ground without movement of the control lever. (only with magnets engaged.)

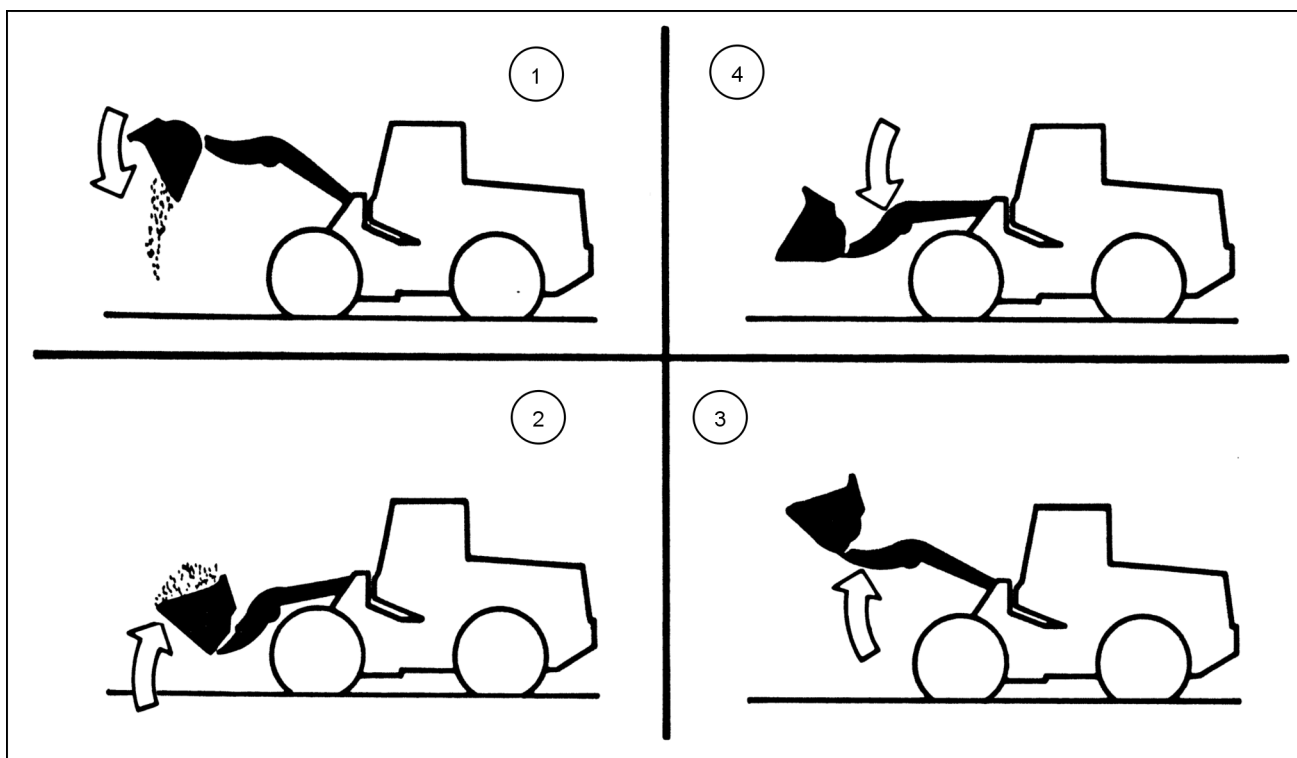
Three function valve - two control levers

NOTE: This page shows the basic loader control lever positions.

See loader function switches in this manual for return-to-dig, bucket height control and return-to-travel/float switches.



RCPH10WHL119BAL 5



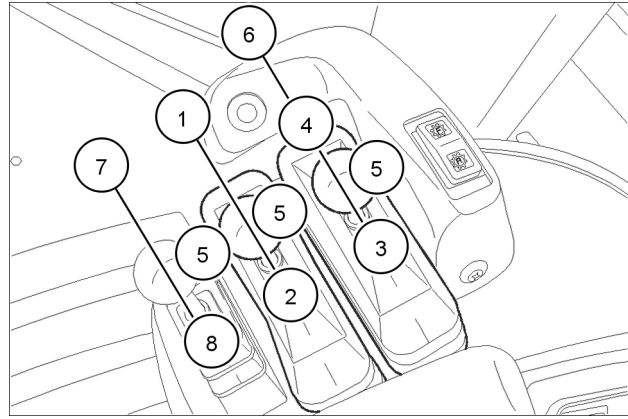
RCPH10WHL045BAH 6

1. Dump bucket
2. Rollback bucket
3. Raise lift arms
4. Lower lift arms
5. Hold - The loader arms and bucket will not move when the control lever is in the hold position. When released, the control lever must be manually moved from the float position to the hold position. (only with magnets engaged.)
6. Float (detent) - This is a detent position. When in the float (detent) position, the loader bucket can follow level of the ground without movement of the control lever. (only with magnets engaged.)
7. Auxiliary function
8. Auxiliary function

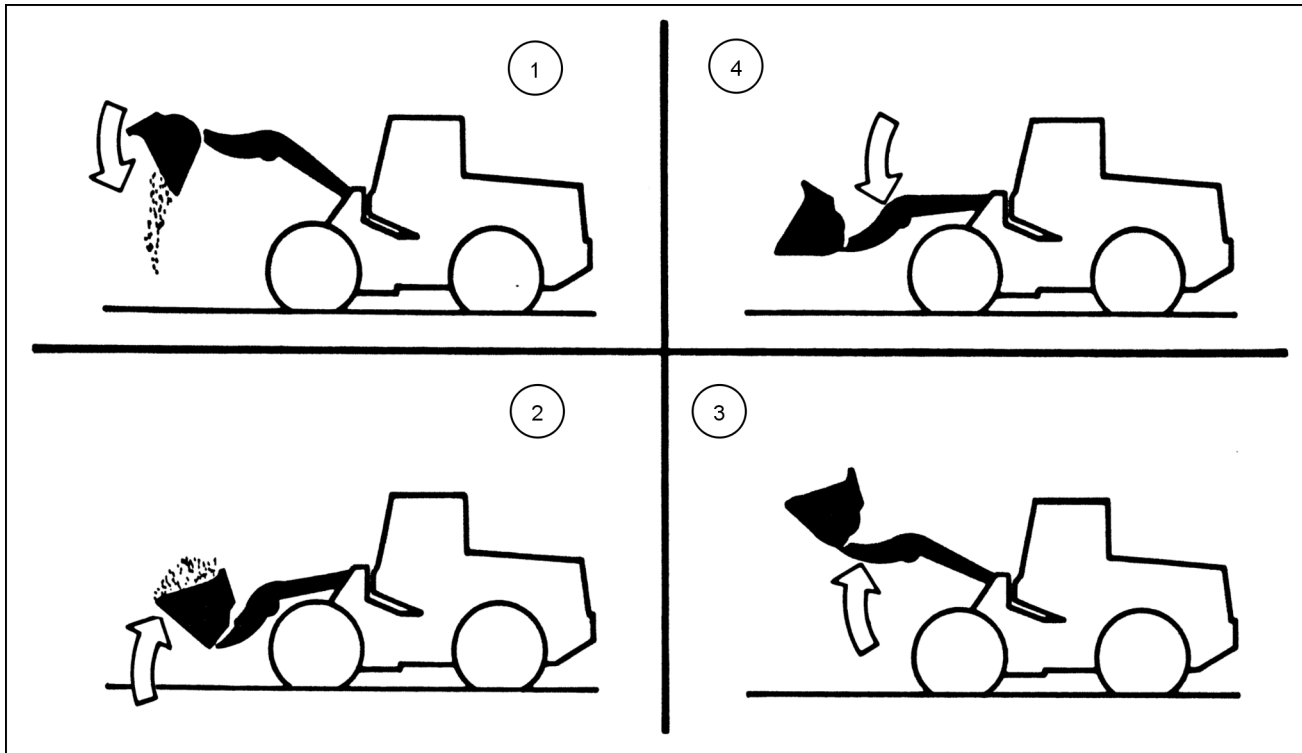
Three function valve - three control levers

NOTE: This page shows the basic loader control lever positions.

See loader function switches in this manual for return-to-dig, bucket height control and return-to-travel/float switches.



RCPH10WHL110BAL 7



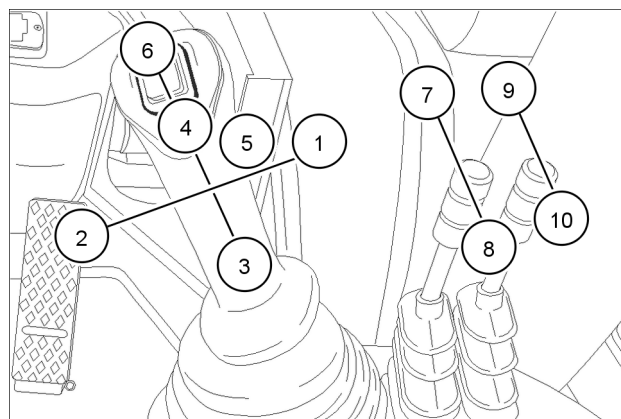
RCPH10WHL045BAH 8

1. Dump bucket
2. Rollback bucket
3. Raise lift arms
4. Lower lift arms
5. Hold - The loader arms and bucket will not move when the control lever is in the hold position. When released, the control lever must be manually moved from the float position to the hold position. (only with magnets engaged.)
6. Float (detent) - This is a detent position. When in the float (detent) position, the loader bucket can follow level of the ground without movement of the control lever. (only with magnets engaged.)
7. Auxiliary function
8. Auxiliary function

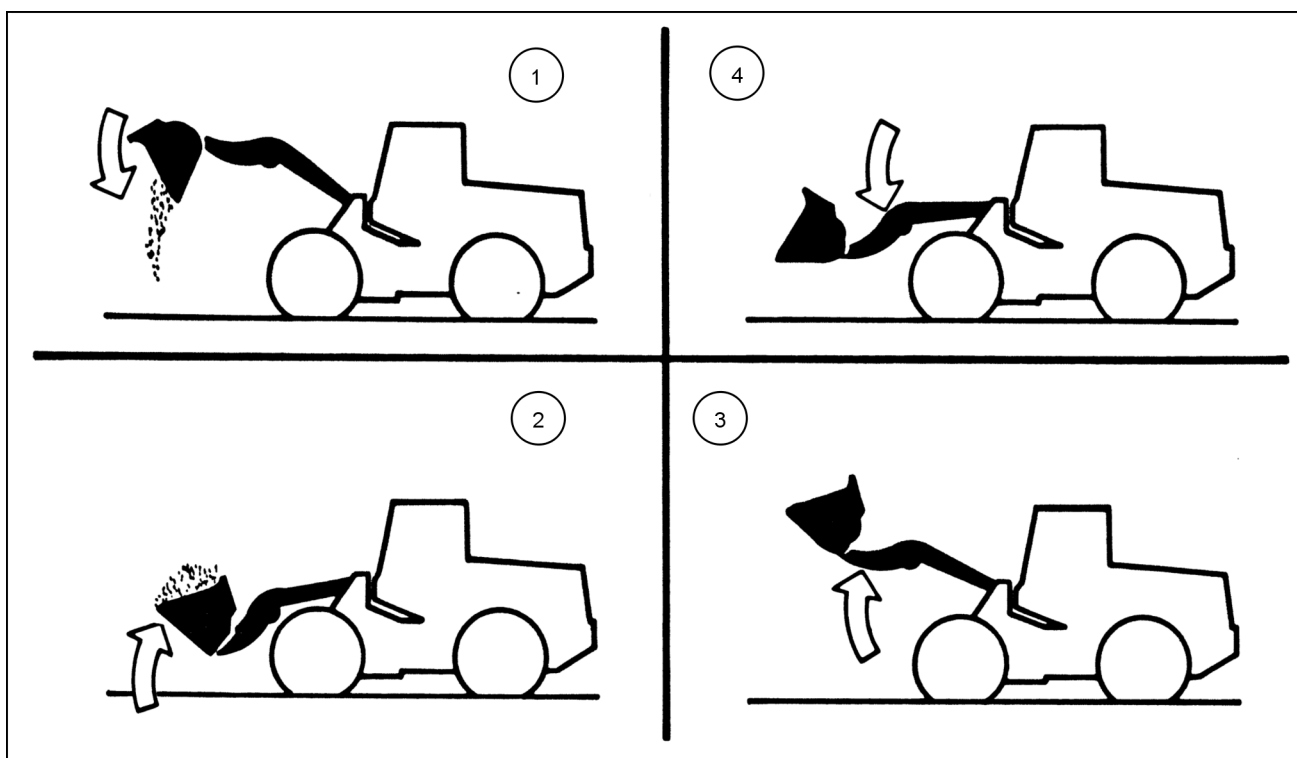
Four function valve - three control levers

NOTE: This page shows the basic loader control lever positions. The Detent Switch is in the OFF position.

See loader function switches in this manual for return-to-dig, bucket height control and return-to-travel/float switches.



RCPH10WHL109BAL 9



RCPH10WHL045BAH 10

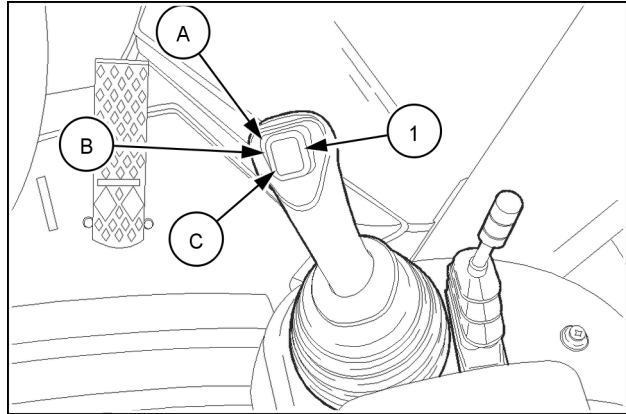
1. Dump bucket
2. Rollback bucket
3. Raise lift arms
4. Lower lift arms
5. Hold - The loader arms and bucket will not move when the control lever is in the hold position. When released, the control lever must be manually moved from the float position to the hold position. (only with magnets engaged.)
6. Float (detent) - This is a detent position. When in the float (detent) position, the loader bucket can follow level of the ground without movement of the control lever. (only with magnets engaged.)
7. First auxiliary function
8. First auxiliary function
9. Second auxiliary function
10. Second auxiliary function

Auxiliary forward, neutral, reverse (F-N-R) switch [60632723]

Auxiliary forward, neutral, reverse (F-N-R) switch for control lever applications

1. Auxiliary joystick F-N-R Switch

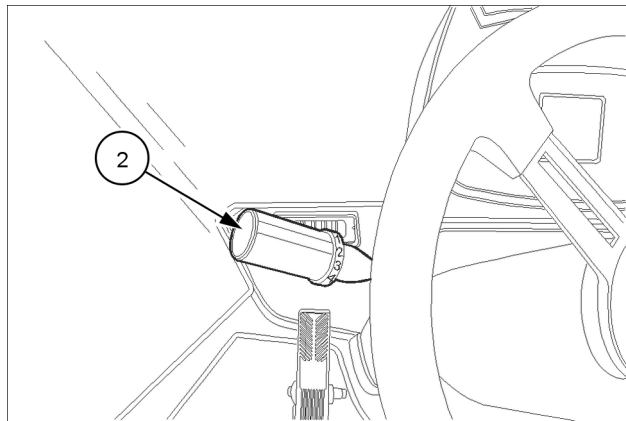
- A. Forward
- B. Neutral
- C. Reverse



RCPH10WHL118BAL 1

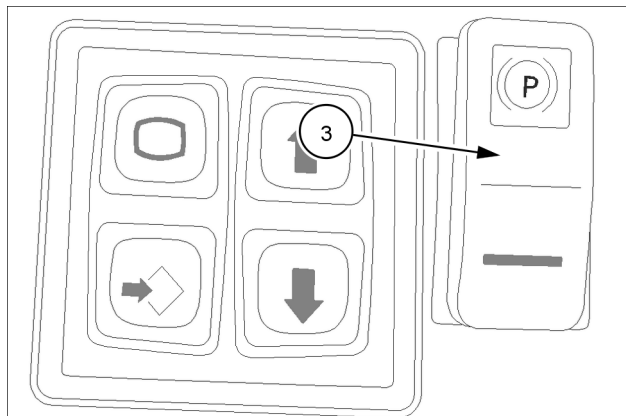
To actuate the auxiliary F-N-R switch the following conditions **MUST** be met:

- 1. The machine must be stopped.
- 2. The engine must be running.
- 3. The auxiliary F-N-R Switch **(1)** must be in Neutral **(B)**.
- 4. The standard transmission control lever **(2)** must be in neutral.



RCPH10WHL116BAL 2

- 5. The parking brake must be released **(3)**.



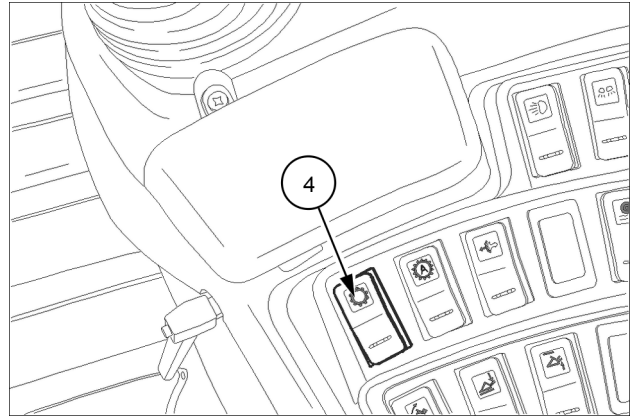
RCPH10WHL019BAL 3

4 - OPERATING INSTRUCTIONS

When steps 1 through 5 have been completed the transmission enable switch may be enabled by pushing down on the top of the switch **(4)**. The indicator light on the bottom of the switch will illuminate.

The transmission enable switch will be DEACTIVATED and F-N-R control will default back to the Standard Transmission Control Lever if:

1. The engine is stopped.
2. The parking brake is applied.
3. The transmission control lever is taken out of the neutral position.

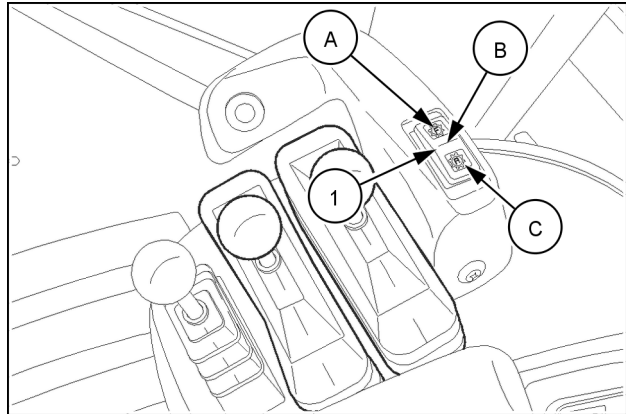


RCPH10WHL008BAL 4

Auxiliary forward, neutral, reverse (F-N-R) switch with three function valve three levers

1. Three Lever Auxiliary F-N-R switch

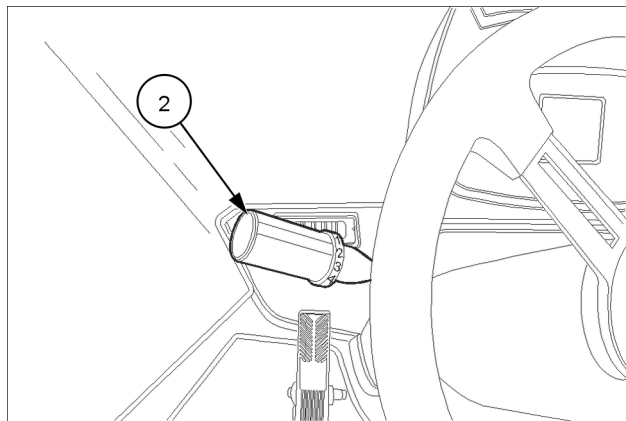
- A. Forward
- B. Neutral
- C. Reverse



RCPH10WHL110BAL 5

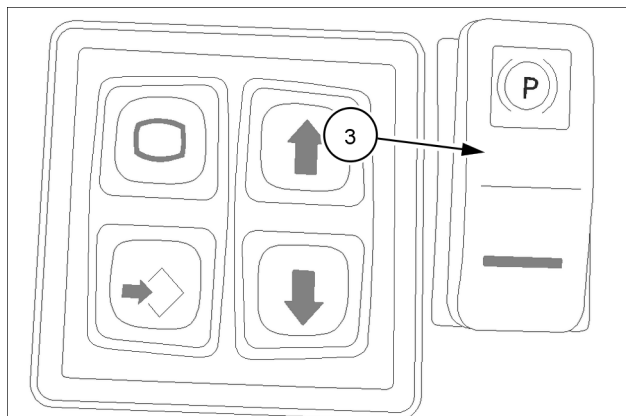
To actuate the auxiliary F-N-R switch the following conditions **MUST** be met:

1. The machine must be stopped.
2. The engine must be running.
3. The auxiliary F-N-R Switch **(1)** must be in Neutral **(B)**.
4. The standard transmission control lever **(2)** must be in neutral.



RCPH10WHL116BAL 6

5. The parking brake must be released **(3)**.



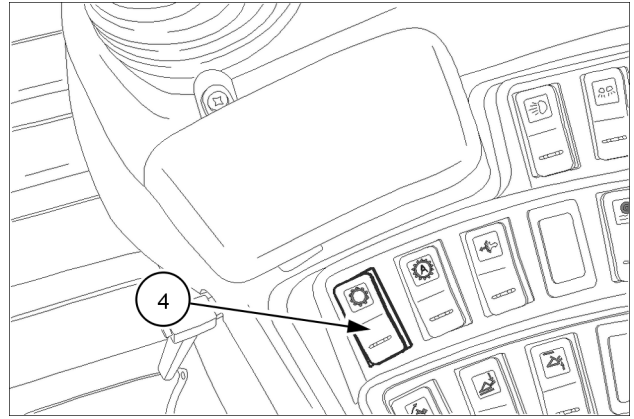
RCPH10WHL019BAL 7

4 - OPERATING INSTRUCTIONS

When steps 1 through 5 have been completed the transmission enable switch may be enabled by pushing down on the top of the switch **(4)**. The indicator light on the bottom of the switch will illuminate.

The transmission enable control will default back to the Standard Transmission Control Lever if:

1. The engine is stopped.
2. The parking brake is applied.
3. The transmission control lever is taken out of the neutral position.

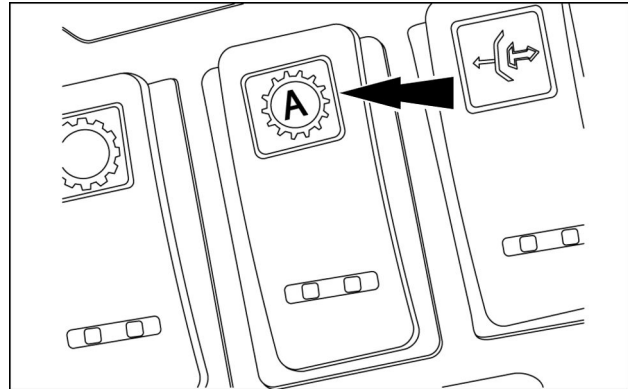


RCPH10WHL008BAL 8

Automatic mode [60632776]

Automatic mode operation

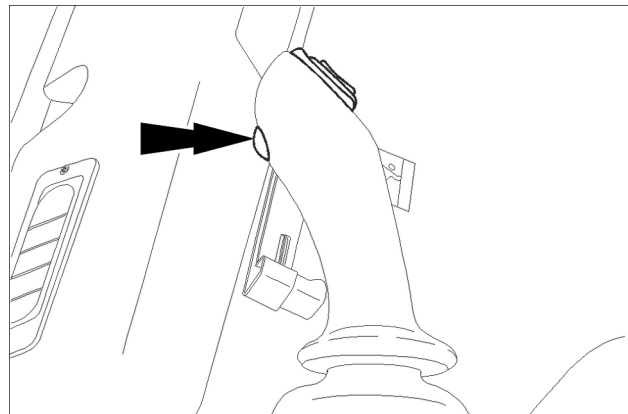
To put the transmission in the automatic mode, press the top of the auto shift switch.



RCIL10WHL197BAL 1

Automatic shifting mode

When the transmission is in the automatic mode, the transmission will start out in first gear or second gear (dependent upon gear minimum setting), and automatically up-shift until the gear selected has been reached. The transmission will also down-shift automatically as the speed decreases.

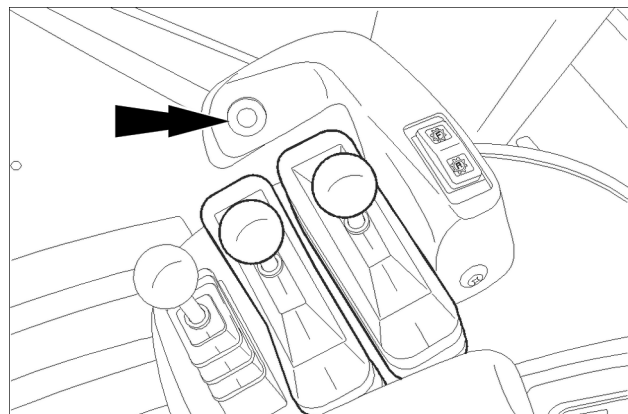


RCPH10WHL120BAL 2

Down-shift button, automatic mode

Use the down-shift button to shift down through the gears in single steps. Each time you press the switch, the transmission shifts down one gear range until reaching the first gear. Once the down-shift button has been pressed down, the transmission maximum gear allowed is lowered. It will return to the automatic mode when **(1)** the transmission control lever gear changes, or **(2)** the transmission control lever is moved to NEUTRAL and then to FORWARD or to REVERSE.

NOTE: When the operator selects the Automatic Mode, the Automatic Mode indicator will be shown on the multi-function display.



RCPH10WHL110BAL 3

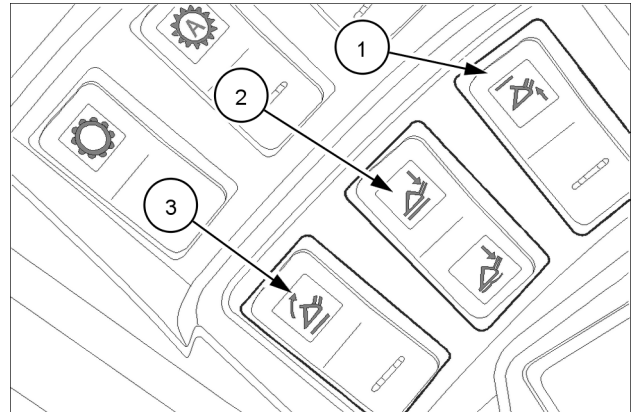
Shuttle shifting (direction change) manual or automatic

It is not necessary to bring the machine to a complete stop when changing directions from forward to reverse or reverse to forward. For smooth operation and operator comfort, reduce engine speed before direction changes.

Loader functions [60632809]

Loader function switches

Push down on the top of the switch to engage all detents.
Push on the bottom of switch for OFF

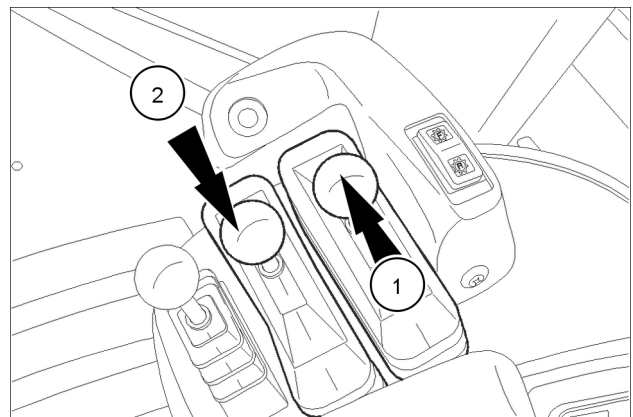


RCPH10WHL024BAL 1

1. Height control
2. Return-to-travel/ float switch
3. Return to dig

Return-to-dig

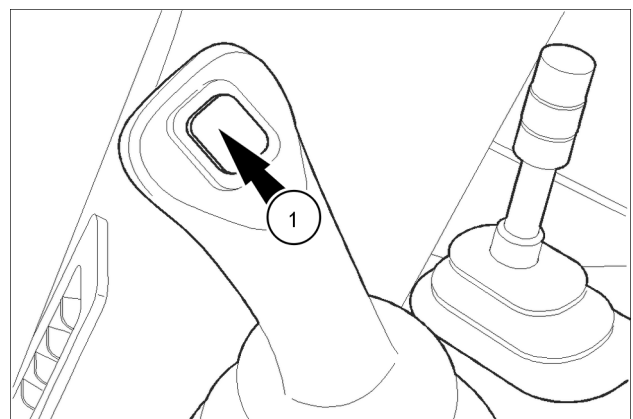
The Return-To-Dig function is used to automatically return the loader bucket to the dig position after you have dumped the loader bucket. To enable the Return-To-Dig function press the top of the switch (3).



RCPH10WHL110BAL 2

1. Float
2. Rollback detent

To actuate, move the control lever(s) into the FLOAT and ROLLBACK detents. The bucket control lever will automatically return to the HOLD position and the loader arm will remain in float when the loader reaches the Return-To-Dig position. See Loader Adjustments in this manual for return-to-dig Adjustments.

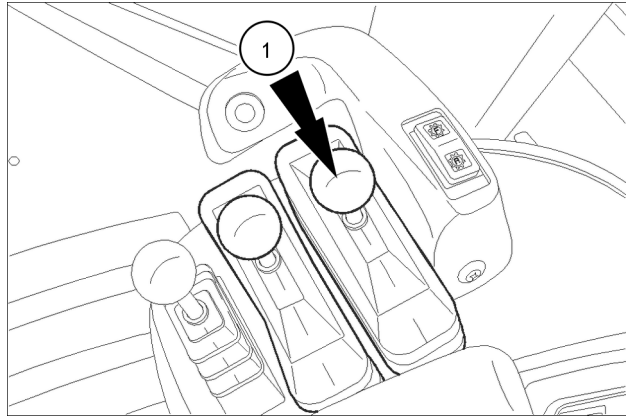


RCPH10WHL119BAL 3

1. Float and rollback detent

Bucket height control

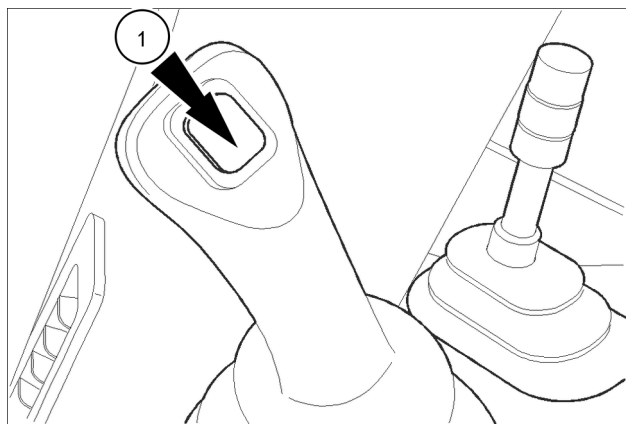
The bucket height control is used to automatically stop the loader arms at the height selected.



RCPH10WHL110BAL 4

1. Raise

To actuate, move the control lever into the RAISE detent. The control lever(s) will automatically return to the HOLD position when the loader bucket reaches the height selected.

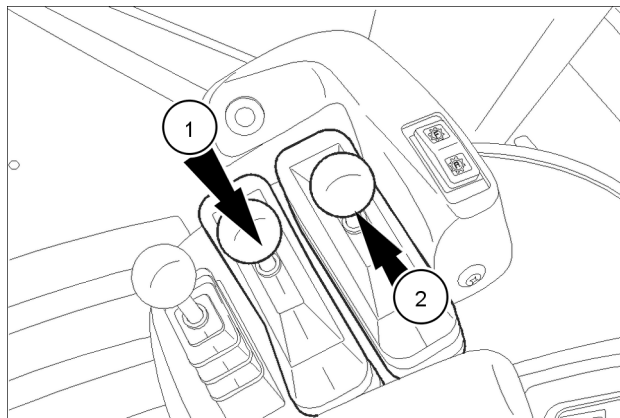


RCPH10WHL119BAL 5

1. Raise

Return-to-travel function

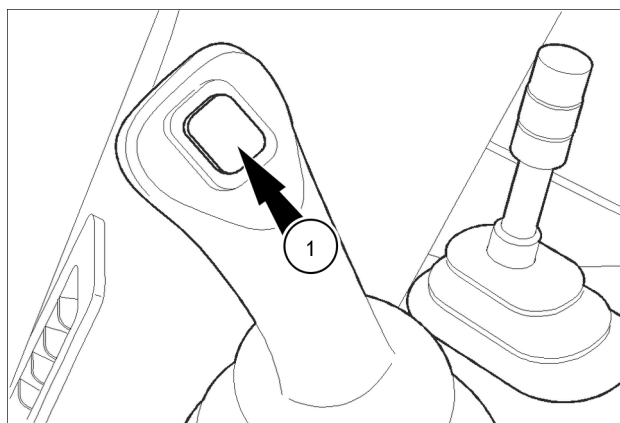
The return-to-travel function is used to automatically stop the loader bucket at the carry height selected. To enable the return-to-travel function, press the top of the return to travel/float switch.



RCPH10WHL110BAL 6

1. Rollback detent
2. Float

To actuate, move the control lever(s) into the FLOAT and ROLLBACK detents. The control lever(s) will automatically return to the HOLD position when the loader reaches the return-to-travel position.

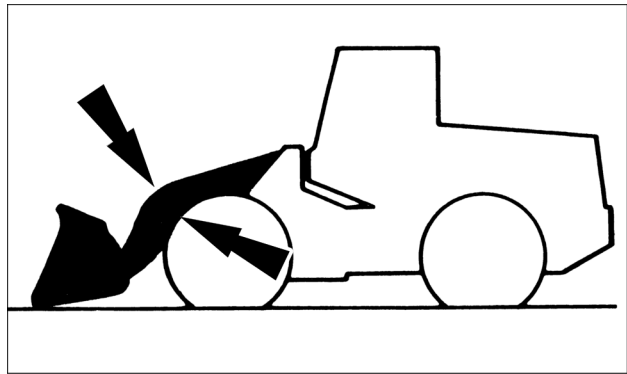


RCPH10WHL119BAL 7

1. Float and rollback detent

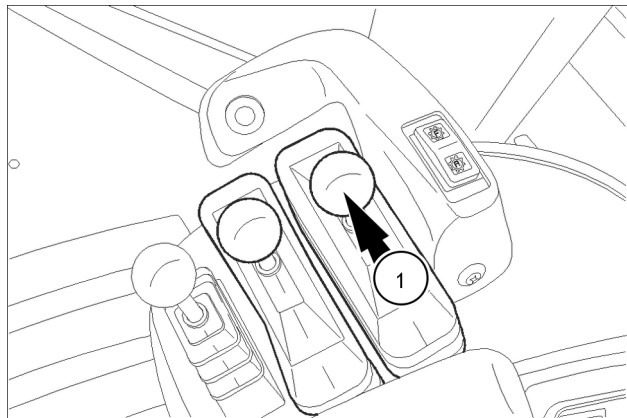
Float

The float function is used to let the loader bucket float across rough ground.



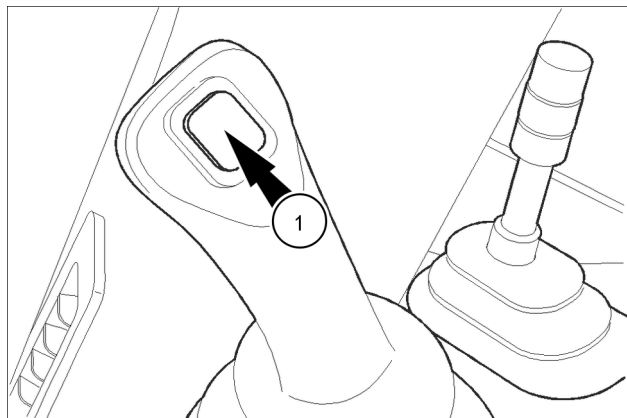
RCIL10WHL018AAL 8

To actuate, move the control lever into the FLOAT detent. The control lever will remain in this position until manually removed. To enable this function press the bottom of the Return-To-Dig/Float switch.



RCPH10WHL110BAL 9

1. Float



RCPH10WHL119BAL 10

1. Float

Loader control

The loader control levers are connected to a hydraulic accumulator through a pressure reducing valve. The purpose of the reducing valve and accumulator combination is to: **(1)** allow the operator to lower the loader arms if the engine stops with the loader arms raised, or **(2)** give the control system hydraulic pressure assistance when operating the machine at low idle speed. To test accumulator performance, perform steps 1 through 5.

1. Start the engine.
2. Raise the loader bucket.
3. Stop the engine.
4. Turn the key to RUN.
5. Verify that the right hand side of the pilot control switch is depressed, allowing the pilot controls to function.

Move the lift arm control to LOWER. The loader bucket must lower to the ground. If the bucket does not lower to the ground, see the Service Manual for this machine or see your dealer.

Brake accumulators

Two hydraulic accumulators are connected in the brake system. The accumulators provide the brake modulating valve with a positive supply of pressurized hydraulic fluid.

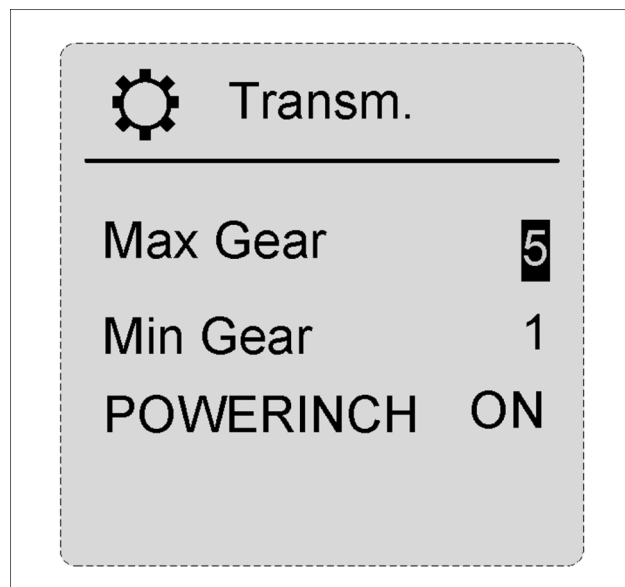
Test the accumulators for correct operation every 100 hours.

1. Start the engine.
2. Run the engine at 1/2 throttle for 15 seconds.
3. Stop the engine.
4. Without starting the engine, turn the ignition key to the ON position. After the instrument cluster completes the diagnostic check, confirm that the brake pressure light is not ON.
5. Repeatedly pump the brake pedal until the brake pressure lamp is illuminated. When pumping the brake pedal, there should be some resistance pressure felt. A slight increase should be felt in the pressure as the brakes are pumped.
6. After the lamp illuminates, continue to pump the brake pedal and count the number of full applications.

NOTE: *If you can complete six (6) full brake applications after the indicator lamp illuminates, the accumulators are working correctly. If you can not complete six (6) applications, see the Service Manual for this machine or see your dealer.*

POWERINCH (5-speed transmission)

POWERINCH adjusts the clutch cut-off point depending on transmission output torque and brake pressure. It controls the vehicle's tractive force through the brake pedal, regardless of engine speed. POWERINCH is a drive line management system which improves the operation of the wheel loader, making it ideal for loading trucks or turning tight corners. At full hydraulic performance, the tractive force needed to move the vehicle is limited to the minimum required instead of the maximum available. This principle reduces power loss in the torque converter and energy loss in the axle service brake. It will aid productivity, as more power is available for the vehicle hydraulics and the driver is guaranteed smooth control at high engine and low driving speeds. It will improve overall handling as well.



RCPH10WHL369BAH 11

Declutch (4-speed transmission)

The declutch switch will disengage the transmission when maximum power is needed for the loader. The transmission declutch is activated by brake pressure. A higher brake pressure to activate the declutch function is desirable when operating on inclines. Higher brake pressure is the result of increasing brake pedal travel. A lower brake pressure to activate the declutch function is desirable when operating on firm, flat terrain. Lower brake pressure is the result of limited brake pedal travel. Push the declutch switch on side console to activate the declutch function. To make adjustments to the declutch pressure, see Chapter 7, Maintenance and Lubrication.

Auxiliary hydraulic connection (if equipped)

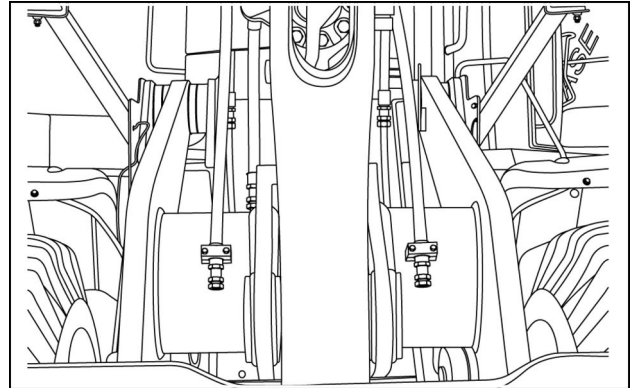
⚠ WARNING

Escaping fluid!

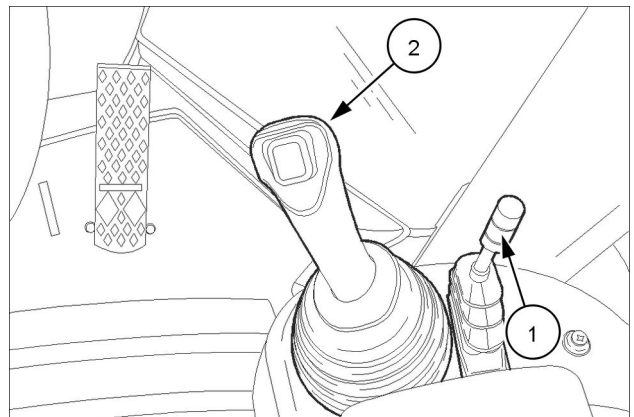
Do not disconnect hydraulic quick coupler under pressurized conditions. Make sure all hydraulic pressure is removed from the system before disconnecting hydraulic quick coupler. Failure to comply could result in death or serious injury.

W0095A

Your Wheel Loader may be equipped with an Auxiliary Hydraulic System. A control lever on the console controls flow to the auxiliary hydraulic connection points on the lift arms. The auxiliary control lever **(1)** used with a joystick **(2)** DOES NOT have mechanical detent.



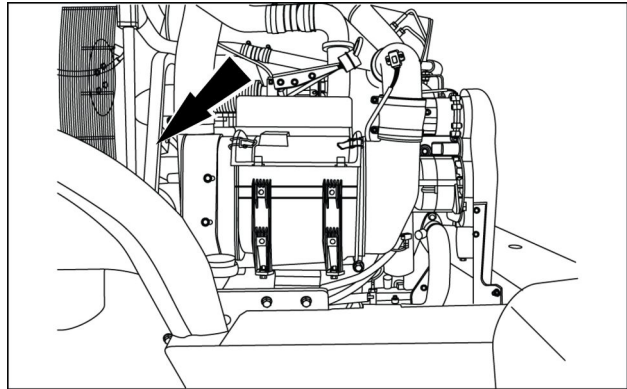
RCIL10WHL280BAL 12



RCPH10WHL118BAL 13

Engine coolant heater (if equipped)

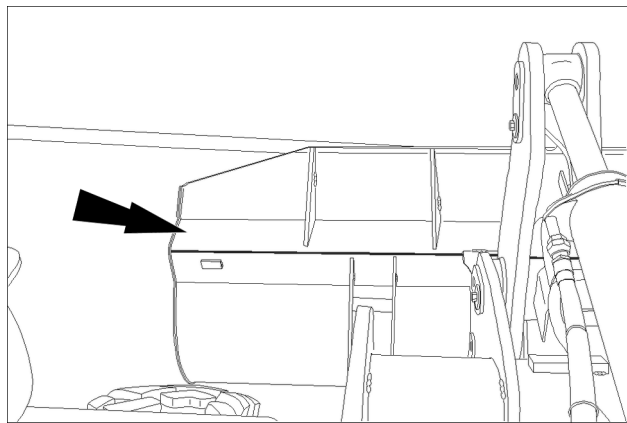
The left side of the engine block has a connection for installing an optional coolant heater. See your authorized dealer for this cold weather option.



RCPH10WHL107AAH 14

Bucket level indicator

The bottom of the bucket is parallel with the ground when the flat portion of the bucket is horizontal.



RCPH10WHL127BAL 15

5 - TRANSPORT OPERATIONS

RECOVERY TRANSPORT

Safety rules [60633284]

WARNING

Driving hazard!

Know all rules, regulations, laws, and required safety equipment for transporting or operating this machine on a road or highway. See your dealer to obtain a rotating beacon, backup alarm, Slow Moving Vehicle (SMV) emblem, and other safety equipment.

Failure to comply could result in death or serious injury.

W0154A

WARNING

Transport hazard!

The machine can slip or fall from a ramp or trailer. Make sure the ramp and trailer are not slippery. Remove all oil, grease, ice, etc. Move the machine on or off the trailer with machine centered on the trailer or ramp.

Failure to comply could result in death or serious injury.

W0152A

WARNING

Transport hazard!

Always use the primary steering when loading or unloading the machine for transport. Do not use joystick steering when loading or unloading the machine from a truck or trailer.

Failure to comply could result in death or serious injury.

W0448A

You must know the rules or laws for transportation and safety that are used in each area that you will be in. Make sure that the truck and machine are equipped with the correct safety equipment.

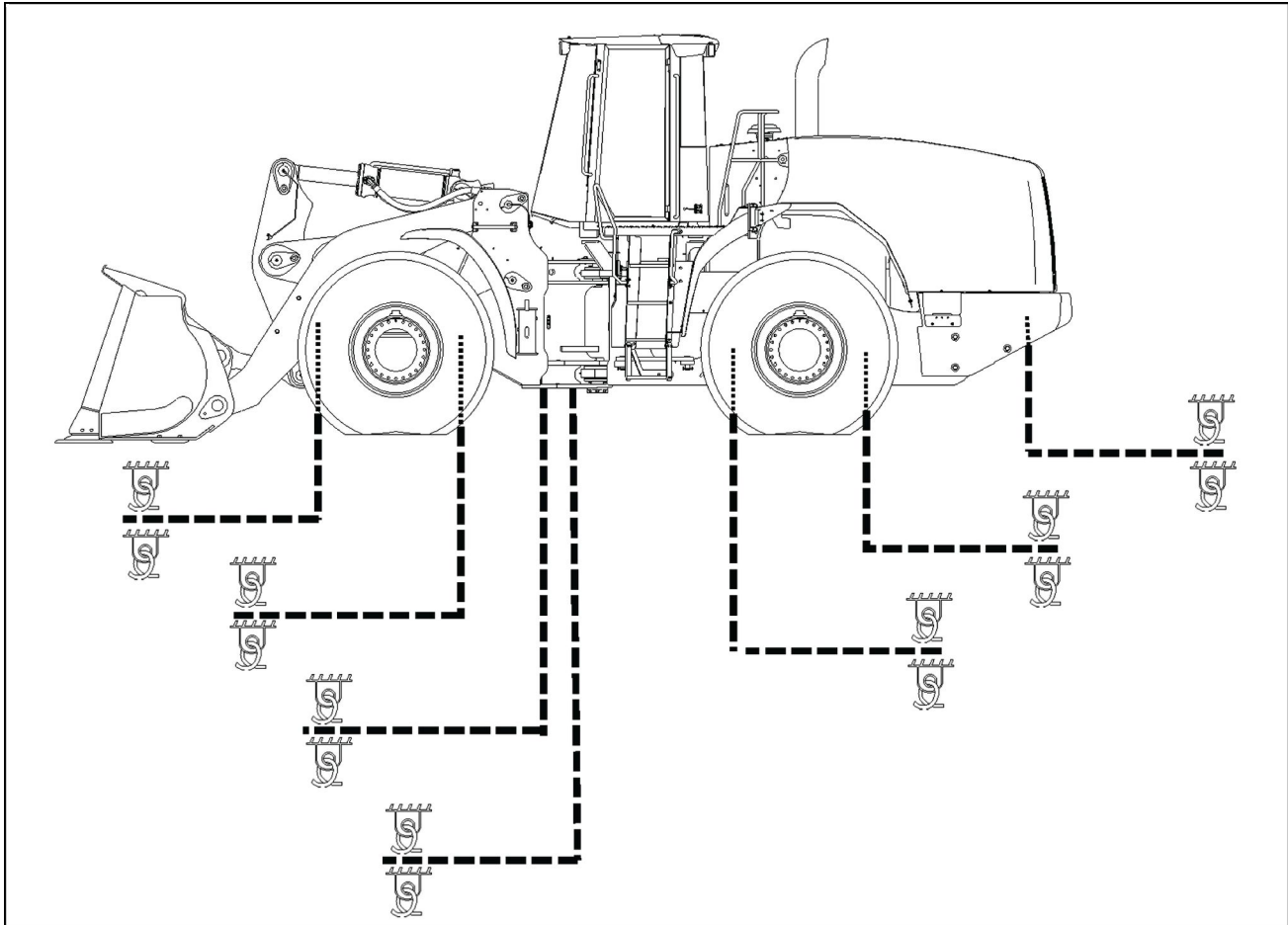
NOTICE: Before you put the machine on a trailer, remove all snow, ice, oil or grease from the trailer and ramp.

1. Put a block at the front and rear of each trailer wheel.
2. Carefully move the machine SLOWLY onto the trailer.
3. Lower the loader bucket onto the trailer.
4. Apply the parking brake and stop the engine. Remove the key.
5. Make sure the transmission control is in the NEUTRAL position and loader controls are in the HOLD position.
6. Put the transport/service link in the LOCKED position.
7. Turn the battery master disconnect switch to the OFF position.
8. Put blocks at the FRONT and REAR of each tire of the machine.
9. Use chains to fasten the machine to the trailer. See the next page for tie down locations of the machine.
10. Put a cover over the exhaust pipe.
11. Measure from the ground to the highest point of the machine. You must know the clearance height of the machine.
12. Advise driver of weights of machine and attachments if special permits or guidelines are necessary.

Transporting the machine [60633327]

Transporting the machine by truck or trailer

ATTENTION: Make certain the truck and trailer are adequate for the machine. The truck, trailer, and machine must be equipped with the correct safety equipment for transport. Wide load escorts may be required for some machines. Remove all dirt, mud, snow, ice, oil or grease from the trailer and ramp before loading or unloading machine.



RCPH11WHL21FAH 1

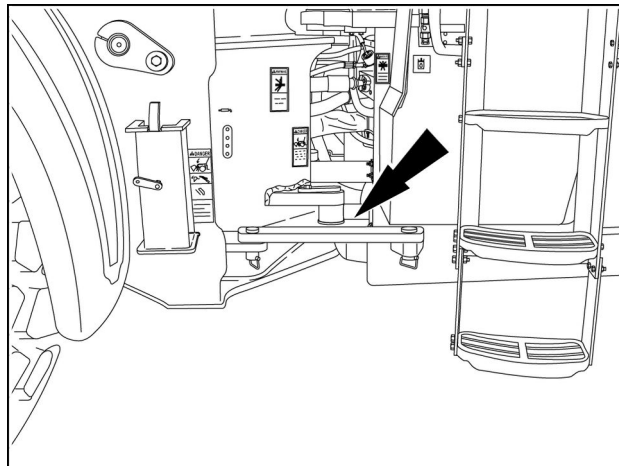
Tie down locations

Use care when loading a machine. Always use primary steering when loading.

1. Place a block at the front and rear of each trailer wheel.
2. Carefully move the machine SLOWLY onto the trailer.
3. Lower the loader bucket onto the trailer.
4. Apply the parking brake. Make sure the transmission control is in the NEUTRAL position and loader controls are in the HOLD position. Stop the engine.
5. Remove the key. Turn the battery master disconnect switch to the OFF position. Lock all doors, hoods, and access panels.
6. Place blocks at the front and rear of each tire of the machine.

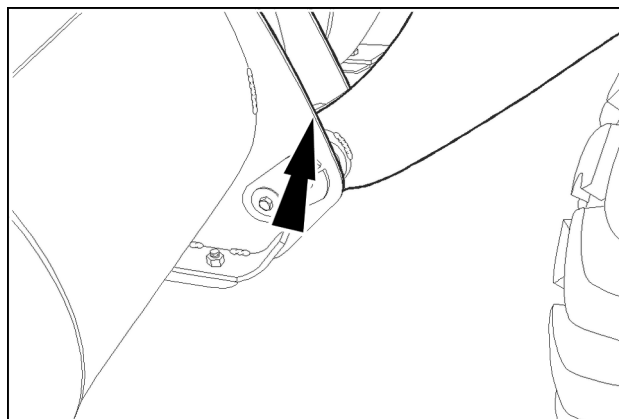
5 - TRANSPORT OPERATIONS

7. Place the transport service link in the locked position.
8. Use provided tie down locations to safely secure the machine. Chains must be securely fastened to the tie down holes and trailer. Tie down locations are indicated on the machine with tie down decals



RCPH11WHL039AAH 2

9. Chains must be securely fastened around the left and right side of the loader arms.
10. Put a cover over the exhaust pipe.
11. Measure the distance between the ground and the highest point of the machine. You must know the clearance height of machine on the trailer.
12. Advise driver of weights of machine and attachments if special permits or guidelines are necessary.

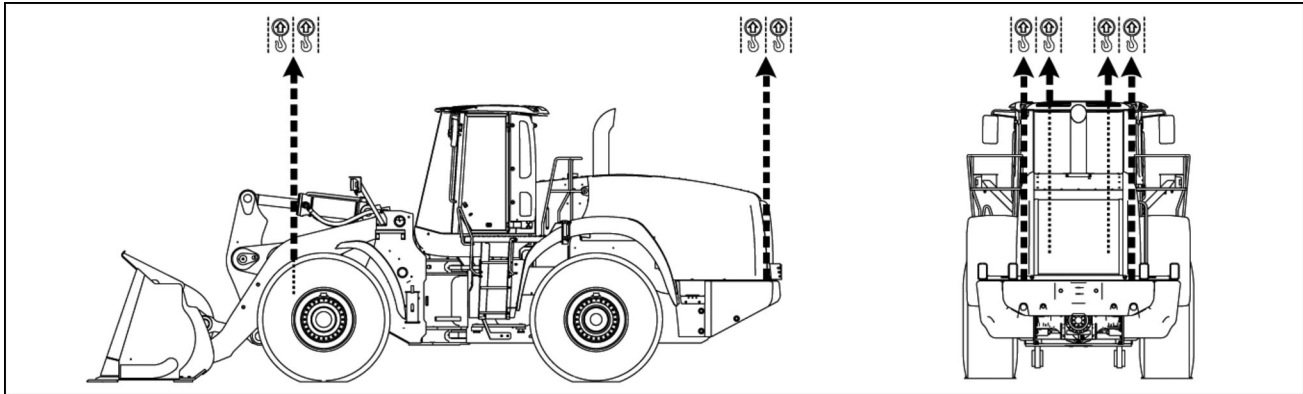


RCPH10WHL132BAL 3

Transporting the machine by rail or ship

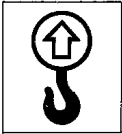
Transport by rail or ship is subject to specific regulation. Consult an approved organization.

Lifting the machine



LEEN11T0143EA 4

Lifting hooks



Always place the articulation transport service link in the locked position prior to lifting. Lift the wheel loader using the four lifting attachment points identified on the machine by the lift hook symbol. The lifting accessories must be oriented to be vertical as shown.

Travelling on public roads [60633380]

⚠ CAUTION

Driving hazard!
Never drive on public roads with any mechanisms engaged.
Failure to comply could result in minor or moderate injury.

C0030A

⚠ DANGER

Unexpected machine movement!
Always engage the transport stops when working around a raised header or when transporting the machine on a public road.
Failure to comply will result in death or serious injury.

D0042A

Check all levels and the tyre inflation pressure.

Place the equipment within the overall dimensions of the machine and raise the equipment from the ground only as high as will not interfere with the manoeuvre.

Check the correct operation of all signal lights.

Some types of tyre and thread are not suitable for roading: check with the tyre manufacturer.

Consider the stopping distances and adjust the travel speed of the vehicle accordingly.

Comply with all road regulations

In the event of slowing-down of the traffic, move the machine to the curb of the road.

⚠ WARNING

Driving hazard!
When traveling on public roads, only use the headlights and hazard warning lights. DO NOT use the work lights. An oncoming vehicle may confuse the rear work lights with the headlights.
Failure to comply could result in death or serious injury.

W0211A

After two hours on the road, stop the machine for half an hour and let the tyres cool-off. When rolling, the tyre pressure increases. This is normal and it must not be decreased.

Check the instrumentation frequently to monitor its operation. Have an escort vehicle warning other road users of your presence on the road with adequate signals (flashing lights, boards etc.).

In the event a "rhythmical motion" occurs, it becomes necessary to slow-down the machine with the brakes to stop the phenomenon and resume travelling at a lower speed.

⚠ WARNING

Driving hazard!
Know all rules, regulations, laws, and required safety equipment for transporting or operating this machine on a road or highway. See your dealer to obtain a rotating beacon, backup alarm, Slow Moving Vehicle (SMV) emblem, and other safety equipment.
Failure to comply could result in death or serious injury.

W0154A

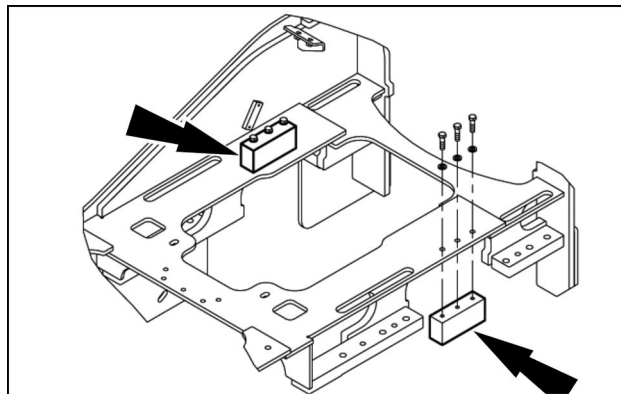
NOTE: The prescriptions listed hereby could require adjustments or modifications as required by the road regulations in effect in different Countries.

TRAVELLING WITH CHAINS

In the event the installation of chains on snowy roads is required, it is necessary to keep in mind some precautions, in particular:

- Machine equipped with tyres type: 26.5 R25XMINE D2; 26.5 R25XLD D2; 26.5 R25RL-5K; 26.5 R25XLD D1; the use of snow chains is inhibited.

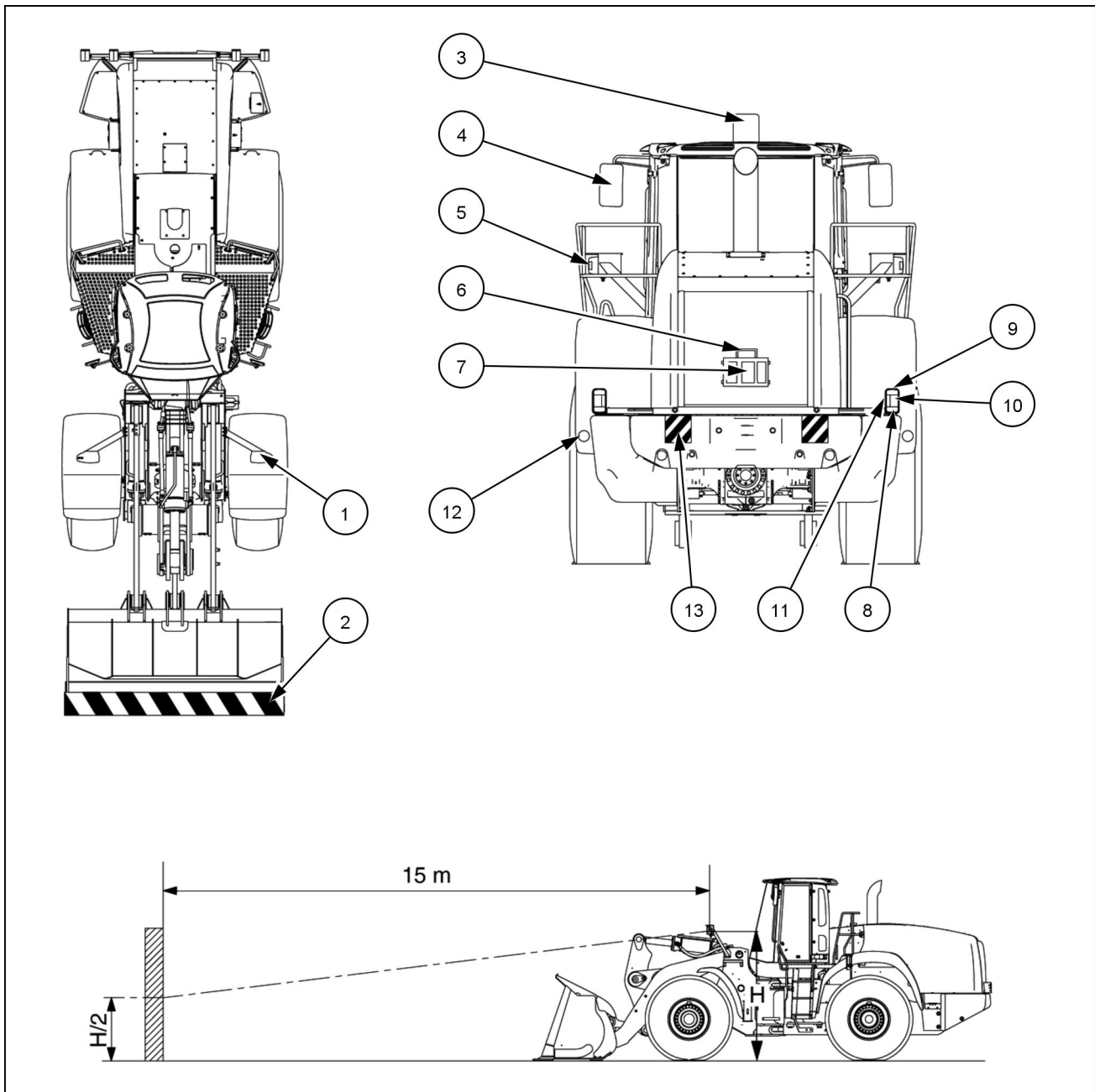
Limit the swing of the rear axle using the stop block (one each side).



LEEN11T0111AA 1

Location of the stop blocks on the frame.

Lights and visual signal lights



LEEN11T0144GA 2

- | | |
|------------------------|------------------------|
| 1. Front lights | 8. Back-up lights |
| 2. Width signal pane | 9. Stop lights |
| 3. Rotary beacon | 10. Turning lights |
| 4. Rear mirrors | 11. Tail lights |
| 5. Turning lights | 12. Rear reflectors |
| 6. License plate light | 13. Width signal panel |
| 7. License plate | |

The angle of the light beams of the low-beam lights must be adjusted so that, when standing in front of a wall at a distance between the lights and wall of **15 m (49 ft)** the maximum height of the light beam against the wall equals half the height measured between the ground and the centre of the light.

NOTE: When travelling on the road, the rear light group, including tail lights, turning and stop lights must be moved outward.

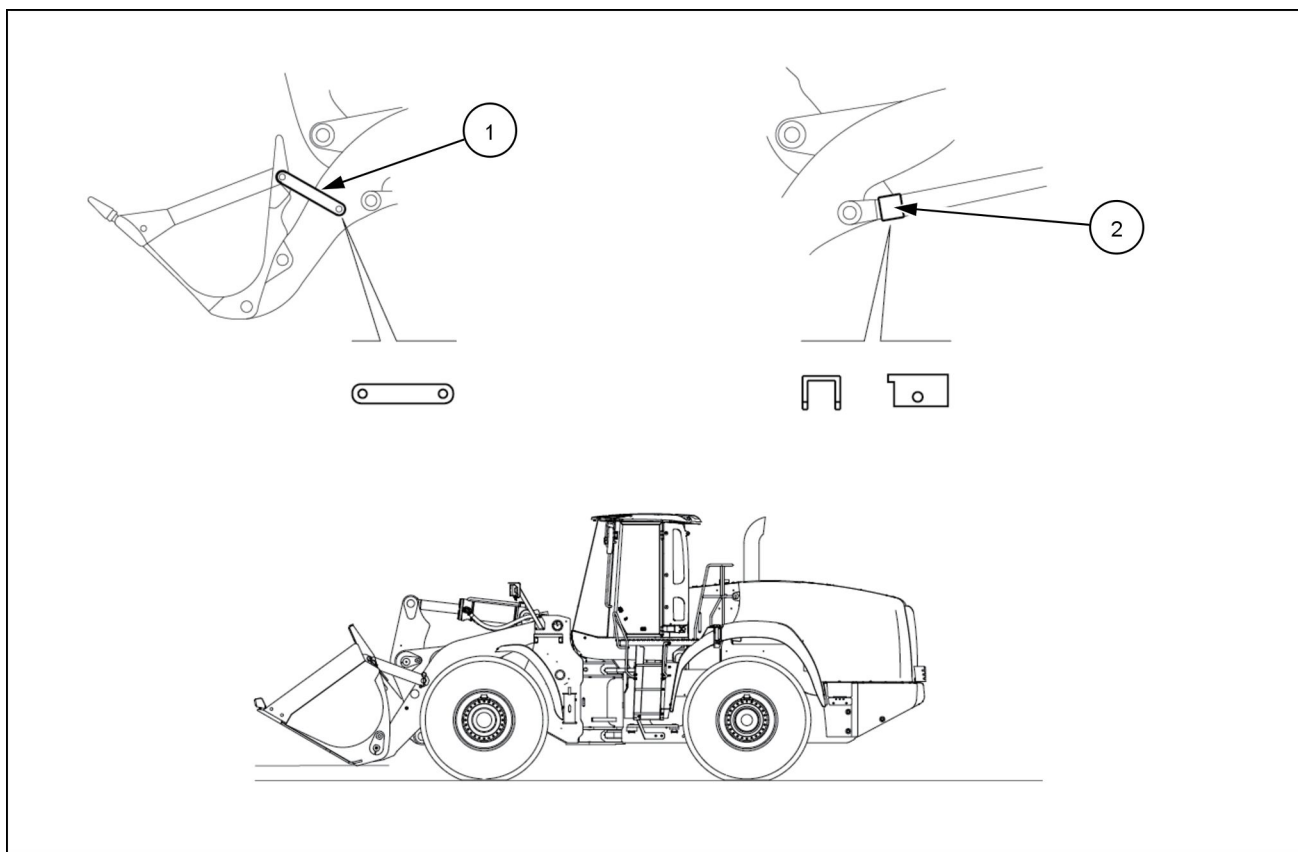
ON-ROAD REGULATIONS

- Equipment and accessories blocked;
- Cutting edges and teeth protected;
- Compulsory operation of approved flashing lights even if lit is not required the use of lighting devices;
- Rooding only if empty;
- The work controls must be locked;
- Working lights must be blanked out;
- Travelling on the road can occur providing that the personnel of the Company help the operator, but not from the machine itself.

EQUIPMENT LOCKING DEVICES WHEN ROADING

The controls of the equipment working system hydraulic circuits are hydraulically locked by a lever, to prevent unintentional movements by the operator, while roading. Inside the compartment, a plate lists the various warnings, including:

ATTENTION: When roading, all equipment must be locked by appropriate mechanical blocks (provided), the control levers must always be locked by the appropriate locks or the hydraulic cut-off lever must be closed.



LEEN11T0145FA 3

1. Bar Equipment lock
2. Sleeve Bucket dropping lock

Moving a disabled machine [60633423]

Engine stalls while traveling

Brake System: The brakes can be applied by pressing the pedal for four or five applications until the accumulator is discharged. The operator must limit use of the brakes in this situation. In the event the brakes cannot be applied by the pedal, apply the parking brake.

The steering effort increases when the hydraulic system loses power. In the event the engine stalls while traveling, park the loader in a safe position and find the problem.

Engine or hydraulic failure

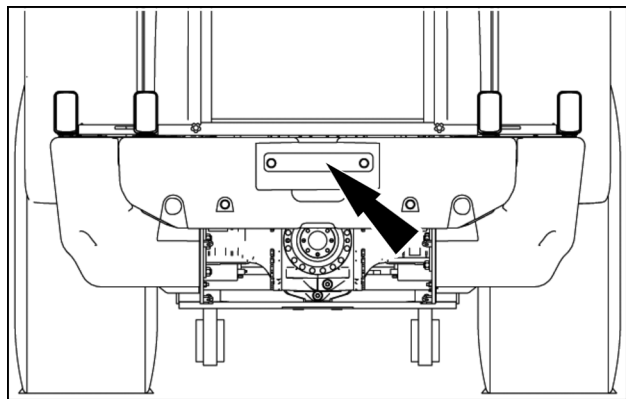
If your machine is disabled, you must make a judgement if the machine can be moved without further damage. If possible, repair the machine at the job location.

If you cannot repair the machine at the job location and if you have a transport trailer, park the trailer as close as possible to the machine.

Never tow the machine from the front

Attach a rigid drawbar to the machine.

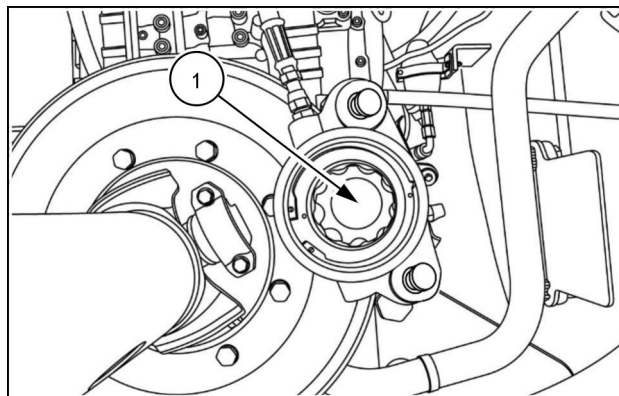
NOTICE: Make certain the towing machine has adequate brake capacity to safely stop both machines.



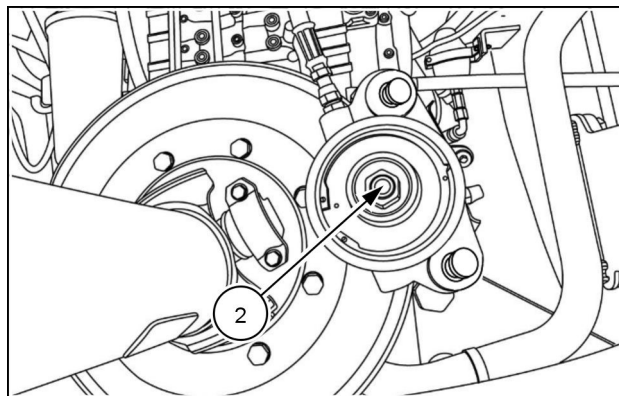
LEEN11T0112AA 1

Releasing parking brake on stalled machine

2. If the machine cannot be started to release the parking brake, do the following:
 - A. Put blocks in front of and behind each wheel.
 - B. Clean the area around the parking brake cover to eliminate contamination.
 - C. Remove the parking brake cover **(1)**.
 - D. Loosen the lock nut **(2)**.
 - E. Turn the adjusting screw counterclockwise until the parking brake is released.
 - F. Tighten the lock nut and replace the cover.
3. If the machine is to be towed more than **0.8 km (0.5 miles)** you must disconnect the front and rear drive shafts.
4. Tow the disabled machine at a maximum speed of **8 km/h (5 mph)**.



LEEN11T0113AA 2



LEEN11T0114AA 3

6 - WORKING OPERATIONS

LOADER OPERATIONS

Operating tips [60633511]

⚠ WARNING

Impact hazard!

Bucket edge or teeth can catch on frozen surfaces or buried objects during surface scraping operations. Before operation, inspect the area for hazardous objects. Operate the machine at slow speed around objects.

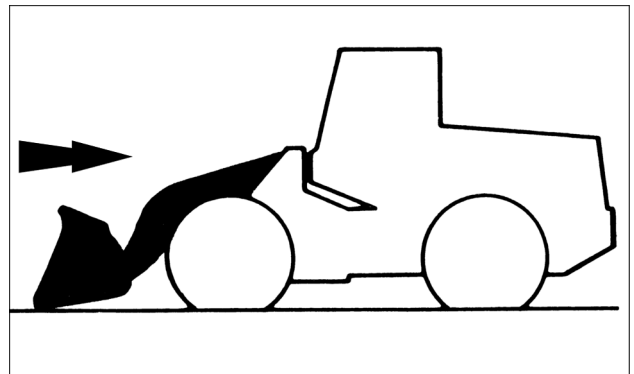
Failure to comply could result in death or serious injury.

W0459A

This Wheel Loader, with standard equipment and authorized attachments, is intended to be used for above ground level digging and general earth moving purpose such as land leveling, truck loading, material rehandling and ditch cleaning. If the machine is to be used for lifting objects, make sure that the machine is properly equipped and follow the instructions and safety precautions in this manual.

Leveling operation

Always operate the machine in reverse when leveling the surface.

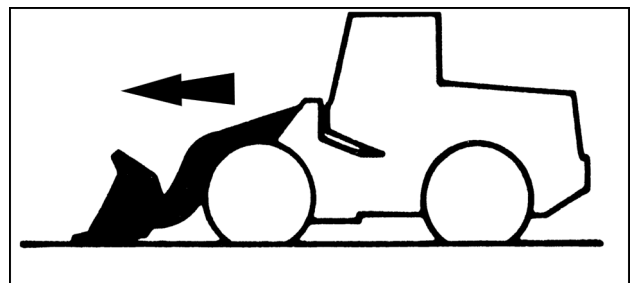


RCIL10WHL018AAL 1

Pushing operation

When pushing material, do not set the bucket dumping angle more than 20 °.

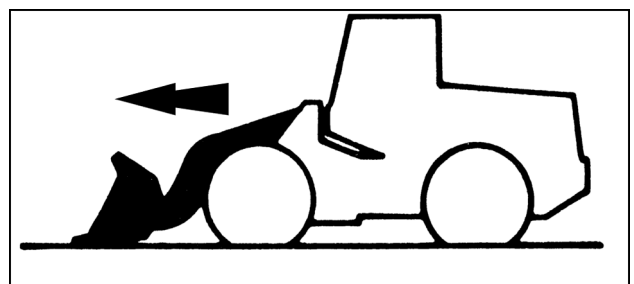
NOTICE: The bucket **MUST NOT** be in the **FULL DUMP** position during the pushing operation.



RCIL10WHL019AAL 2

Scraping operation

When scraping hard or frozen surfaces the bucket must be level and flat to the surface. Operate the machine at a slow speed.

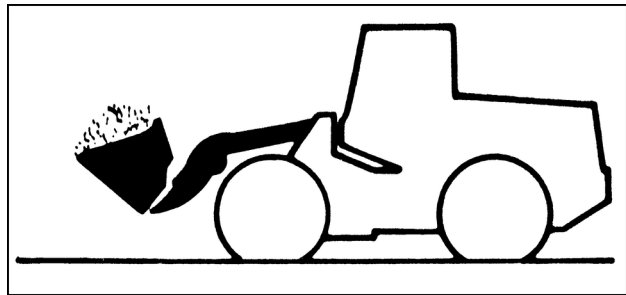


RCIL10WHL019AAL 3

Transport and carry operation

The bucket must be in the roll back position and the bottom of the bucket must not be more than **305 - 457 mm (12.0 - 18.0 in)** off the surface.

NOTICE: When you operate the machine, keep the loader bucket as low as possible. This low position gives better balance and permits you to see more clearly. If the bucket is full and you move the machine over ground that is rough or surfaces that can cause the machine to slide, always operate at slow speed.



RCIL10WHL020AAL 4

Operating on a slope

⚠ WARNING

Driving hazard!

Hillside operations can be dangerous. Rain, snow, ice, loose gravel, or soft ground, etc. can change the ground conditions. You must make a judgment if it is safe to operate your machine on any hillside or ramp.

Failure to comply could result in death or serious injury.

W0144A

Before you operate this machine on a hill, always put the transmission in a lower range and test the brakes. DO NOT let the machine move down a hill with the transmission in NEUTRAL. DO NOT use the declutch switch when operating on a hill

- Use extra caution on hillside operations.
- Make sure that the low speed travel is selected.
- Always travel in the same direction as the slope, to prevent the machine from turning over.

NOTICE: On steep slopes using the down shift mode of the transmission is recommended to aid braking and to help prevent brake over heating and premature disc wear.

Operating the machine in water

WARNING

Driving hazard!

Do not operate the machine in a fast flowing stream. Fast flowing water can cause you to lose control of the machine.

Failure to comply could result in death or serious injury.

W0151A

- Make sure that the bottom of the stream, or water in which you will work, can support the weight of the machine.
- Do not allow the water level to reach the wheel rim.
- Before using the machine in water, inject large quantities of fresh grease into the appropriate grease fittings.
- After completing the operation make sure to inject fresh quantities of grease into any fitting that was in water.

Joystick operation [60633834]

⚠ WARNING

Driving hazard!

**Check all controls and safety devices in a safe, open area before starting work.
Failure to comply could result in death or serious injury.**

W0248A

⚠ WARNING

Driving hazard!

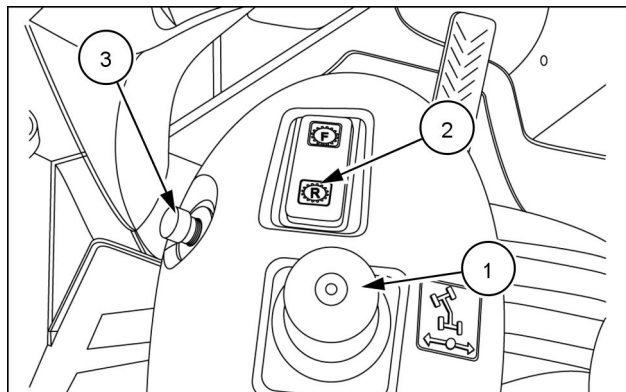
Always use the primary steering when traveling on a public road or highway. The left armrest must be raised and in a locked position during travel. Do not use joystick steering when traveling on a public road or highway.

Failure to comply could result in death or serious injury.

W0451A

Joystick steering control lever (optional)

The joystick steering control lever allows the loader to be operated using hand controls located on the left operator seat armrest. It allows for steering capabilities at the operator's fingertips. Moving the lever right or left steers the machine in the right or left direction. When the Joystick is released, the lever will return to the neutral position automatically. The machine will remain in the last direction chosen. Forward and reverse are accomplished with the F-N-R switch. Use the joystick steering controls for short cycle, repetitive high production load and carry operations to reduce operator fatigue and increase operating efficiency.



1. Joystick steering control lever
2. Forward-neutral-reverse switch
3. Kick-down switch

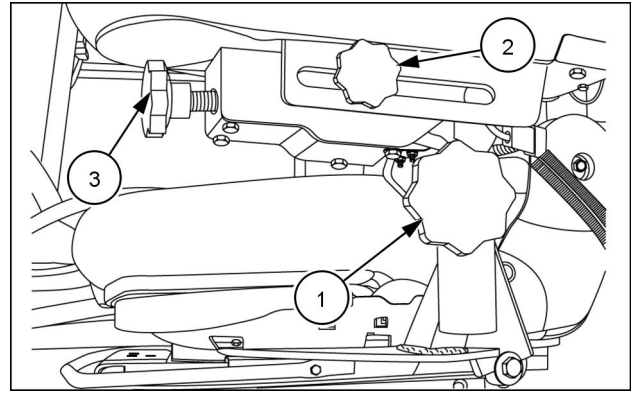
Joystick steering armrest adjustment

The left arm rest equipped with optional joy stick steering controls can be adjusted for operator comfort.

To adjust the height of the armrest, loosen knob **(1)**. Lower or raise the armrest into the desired position, then retighten the knob.

To adjust the arm rest forward or backward, loosen knob **(2)**, then move the armrest back or forward until it reaches the desired position.

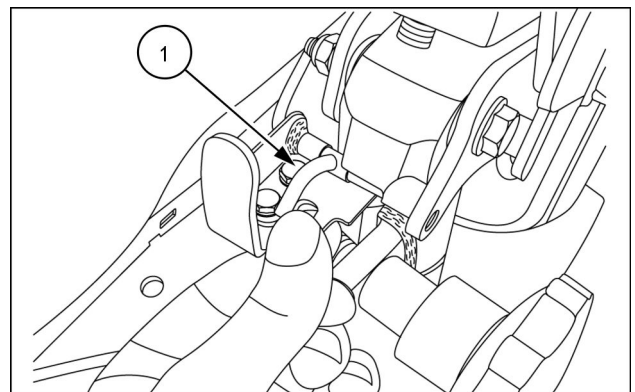
Retighten the knob once the adjustment is complete. For tilt adjustment, loosen knob **(3)**, then tilt the armrest into the desired position. Retighten the knob once the adjustment is complete.



RCIL10WHL199BAL 2

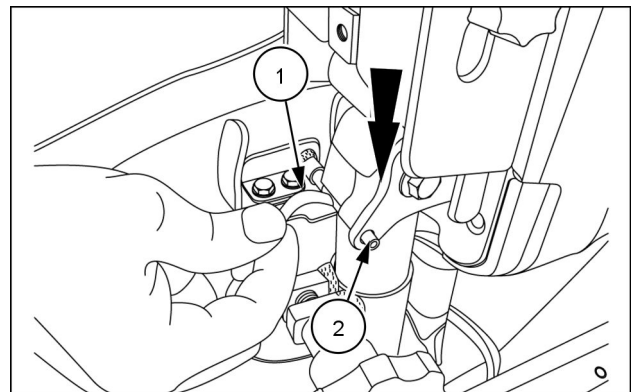
Locking arm rest in raised safety position

1. To lock the arm in the raised safety position, raise the arm to its vertical position. To block the armrest, raise the red pivot **(1)**.



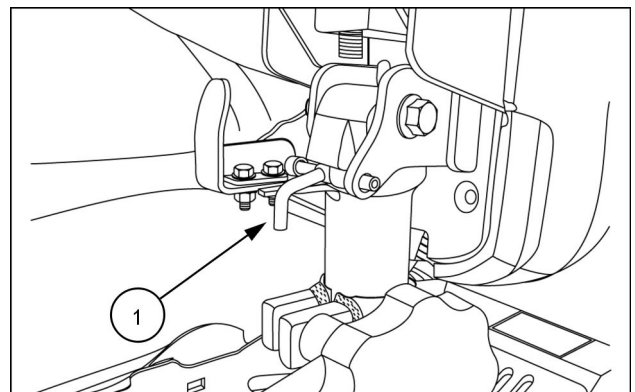
RCIL10WHL200BAL 3

2. Press the pivot **(1)** in the direction indicated by the arrow in the figure and insert it into detent **(2)**.



RCIL10WHL201BAL 4

3. Lower pivot **(1)**. To unlock the armrest, pull the pivot **(1)** outward, then lower.



RCIL10WHL202BAL 5

Joystick steering control lever (optional)

WARNING

Driving hazard!

Use caution when turning with the joystick steering control. Abrupt movements of the joystick steering control to the left or right could cause the machine to turn more sharply than acceptable. Take necessary precautions.

Failure to comply could result in death or serious injury.

W0447A

WARNING

Driving hazard!

If the hydraulic pilots are disengaged, the joystick steering remains active. Always disengage the joystick steering when not in use.

Failure to comply could result in death or serious injury.

W0449A

WARNING

Driving hazard!

For optimum control, always use the primary steering wheel when operating at higher machine speeds. Do not use the joystick steering control when operating at speeds above 20 km/h (12.4 mph).

Failure to comply could result in death or serious injury.

W0450A

WARNING

Driving hazard!

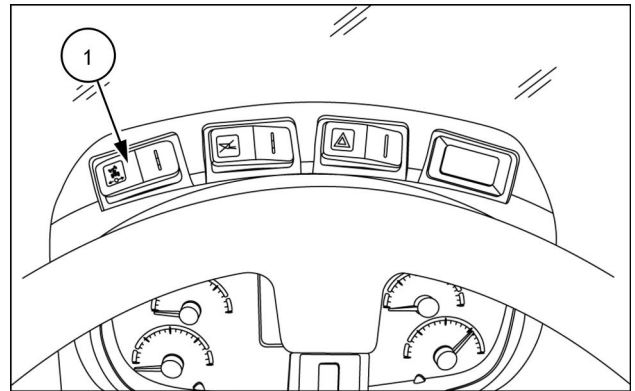
Always use the primary steering when traveling on a public road or highway. The left armrest must be raised and in a locked position during travel. Do not use joystick steering when traveling on a public road or highway.

Failure to comply could result in death or serious injury.

W0451A

Activating joystick steering

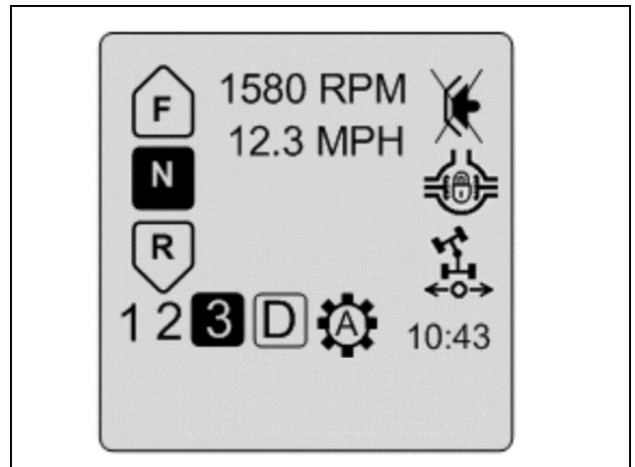
The joystick steering switch (1) is located above the console. The switch has three positions: The center position is the neutral position. Pressing the left side of the switch activates the joystick steering command function. The LED on the LCD multifunction display indicates that the Joystick Steering command is activated. Pressing the right side of the switch deactivates the Joystick Steering function.



RCPH10WHL499AAH 6

The joystick steering icon will illuminate on the main driving screen, indicating machine travel is operated with the joystick. To return the steering wheel to operation, stop the machine in neutral, engage the brake, and push on the right side of the switch. Joystick steering speed can be set with the settings menu.

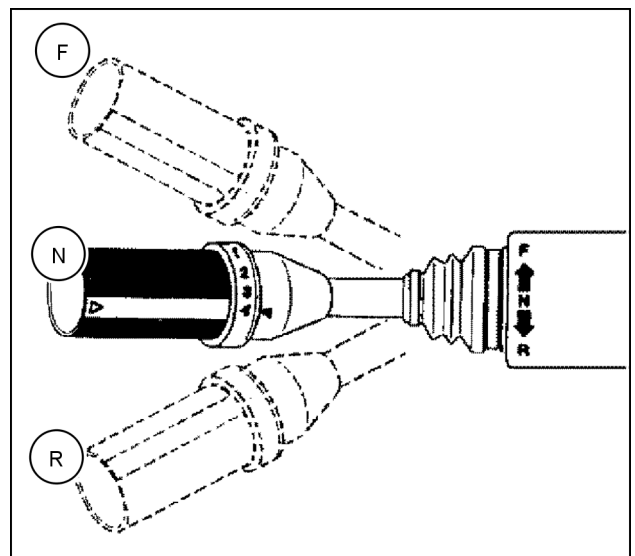
NOTICE: If the operator moves the standard steering wheel, the joystick steering function automatically ceases and steering capabilities return to the standard steering wheel. When the steering wheel is released, the operator can return to joystick steering, and joystick steering will again be functional. The operator can also choose to turn off joystick steering at this time if the operation is complete.



LEIL12WHL0035BA 7

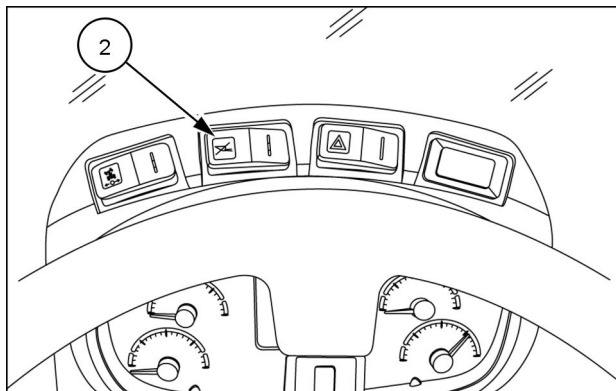
Before activating the joystick steering:

1. Stop the wheel loader.
2. Lower the left armrest in the horizontal position.
3. Shift gear on steering column in neutral position.

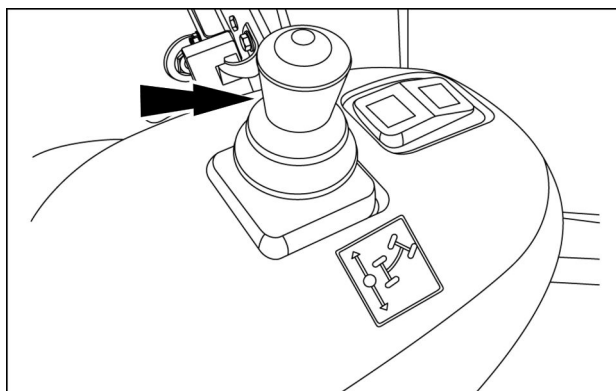


RCIL10WHL193BAL 8

4. Disable the pilot control switch **(2)**.

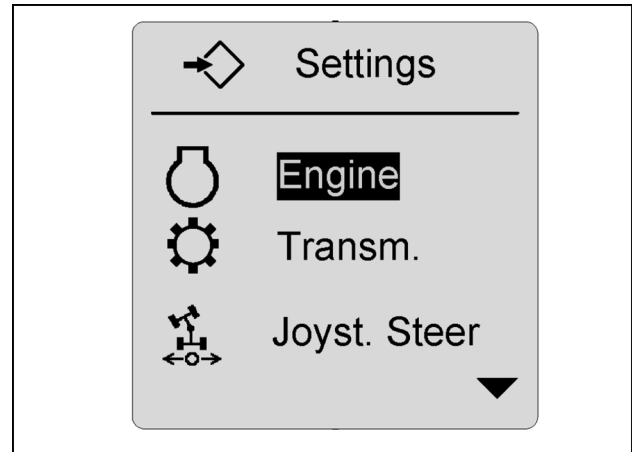


5. Steering and travel are directed with this lever only when the joystick steering is activated.



Joystick steering speed select

When joystick steering has been enabled, joystick steering will be indicated on the LCD screen. Use joystick steering for repetitive, high production operations such as truck loading, etc. Joystick steering is not intended for primary steering use. Highlight joystick steering on the Settings screen and press the enter key to choose joystick steering speed selections.



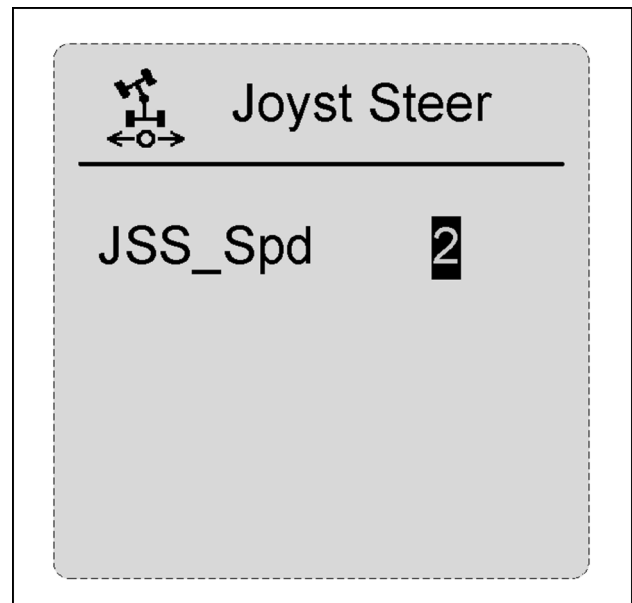
RCPH10WHL366BAH 11

To select the speed most suitable for the operation being performed when using joystick steering, highlight the Joystick Speed Select at the preference screen and press the confirm key. Choose the speed from a one to three range: slow (1), standard (2), or fast (3) using the arrow keys. After the desired speed has been selected, press the confirm key again to lock in the speed selection. The higher the range selected, the more responsive steering capabilities of the machine become. Always set the speed to suit the operator, operating conditions, and work to be performed. As the operator becomes more familiar with joystick steering, a higher steering speed may be desired.

SPEED LEVELS

1. Slow
2. Standard
3. Fast

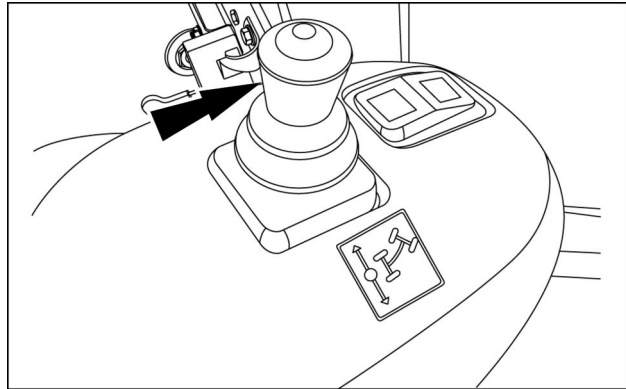
NOTICE: When first becoming accustomed to joystick steering, operate the machine in a lower speed range in a clear open area.



RCPH10WHL370BAH 12

Steering with joystick control

The machine will travel in the direction the lever is moved. When the lever is released, it will return to the neutral, center position. Use caution when turning the machine, as the machine can turn sharply if the joystick steering lever is used abruptly. When executing a turn, move the lever gradually in the direction of the desired turn. Steering can be returned instantly to standard steering if the steering wheel is moved from its stationary position.



RCIL10WHL204BAL 13

Left turn

Move the lever gradually to the left. An abrupt movement to the left will cause the machine to turn sharply to the left. Be sure to move the lever in a careful, gradual shift.

Right turn

Move the lever gradually to the right. An abrupt movement to the right will cause the machine to turn sharply to the right. Be sure to move the lever in a careful, gradual shift.

Reverse left

With the transmission in reverse, move the lever gradually to the left for a left reverse turn. An abrupt movement to the left reverse will cause the machine to turn sharply to the left. Be sure to move the lever in a careful, gradual shift.

Reverse right

With the transmission in reverse, move the lever gradually to the right for a right reverse turn. An abrupt movement to the right reverse will cause the machine to turn sharply to the right. Be sure to move the lever in a careful, gradual shift.

Steering and bucket

The steering speed of the wheel loader is the same in both directions and will increase gradually with the position of the joystick.

The lift arm and bucket control lever will operate as it would with conventional steering. Practice with the joystick steering in a clear area unobstructed by people and other equipment.

Forward, neutral, reverse (F-N-R) Switch

- A. Forward
- B. Neutral
- C. Reverse

An F-N-R (forward-neutral-reverse) switch is located on the left arm rest as a convenience feature when using the joystick steering option. The features and functions of the switch are identical to the standard F-N-R switch. This F-N-R switch is only active when the joystick steering has been activated.

To actuate the armrest F-N-R switch the following conditions **MUST** be met:

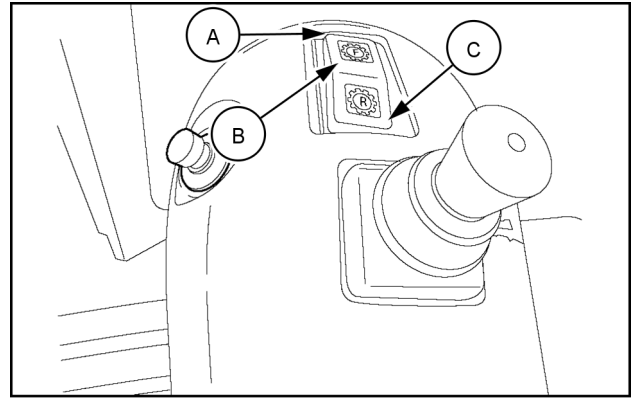
1. The machine must be stopped.
2. The engine must be running.
3. The armrest F-N-R switch must be in neutral.
4. The standard transmission control lever must be in neutral.
5. The parking brake must be released.

NOTICE: The gearshift lever located on the steering column always has priority.

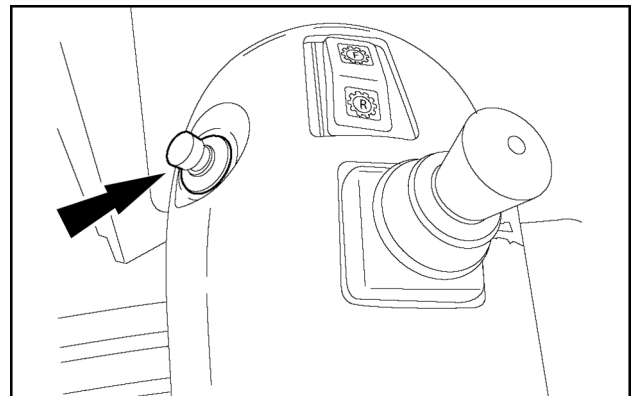
Kick-down switch

The kick down switch is used to shift down through the gears in single steps. Each time the switch is pressed, the transmission will shift down one gear range until first gear is reached. Once the kick down switch has been pressed down, the transmission maximum gear allowed is lowered. It will return to the automatic mode when the transmission control lever gear changes, or the transmission control lever is moved to NEUTRAL and then to FORWARD or to REVERSE.

When the Automatic Mode has been chosen by the operator, the Automatic Mode indicator will be shown in the multi-function display.



RCIL10WHL189BAL 14



RCIL10WHL189BAL 15

7 - MAINTENANCE

GENERAL INFORMATION

Servicing [60633893]

⚠ WARNING

Improper operation or service of this machine can result in an accident.

Read and understand the **SAFETY INFORMATION** Section before you perform any maintenance, service, or repairs. Read and understand the specific service procedures for the components you plan to work with before you start servicing the machine.

Failure to comply could result in death or serious injury.

W0138A

⚠ WARNING

Personal Protective Equipment (PPE) required.

When assembling, operating, or servicing the machine, wear protective clothing and PPE necessary for the particular procedure. Some PPE that may be necessary includes protective shoes, eye and/or face protection, hard hat, heavy gloves, filter mask, and hearing protection.

Failure to comply could result in death or serious injury.

W0353A

Follow the maintenance intervals by checking the hour meter every day. Before starting maintenance, park the machine on flat, firm ground, away from any obstacles, with the bucket/attachment on the ground. Keep all unauthorized personnel clear of the area. Unless otherwise specified, all maintenance operations should be carried out with:

- the engine stopped
- the machine parked on a firm, level surface
- the transport/service link locked into position to stop the machine from unexpected articulation
- the parking brake engaged
- the key removed from the key switch
- a "DO NOT OPERATE" tag on the key switch
- wheel chocks blocking the wheels
- all circuits cooled down prior to starting work
- all hydraulic pressure released in lift arm and bucket/attachment circuits
- any accumulator pressure released for the appropriate circuit

Clean the grease fittings before lubrication. Clean around plugs and filler holes before adding fluid. No dust or dirt must enter the components or the circuits. Wear suitable clothing and remember to use the necessary safety equipment.

When performing service work on the machine, place a Do Not Operate tag on the instrument panel or key switch. Turn off engine and remove key before leaving operator's compartment.

Any modification to this machine without prior authorization could cause serious injury. Do not make any modifications without authorization. Consult your dealer.

The service intervals in this chapter refer to normal operating conditions. During the first operation period of a new machine (100 initial hours) or rebuilt component and under particularly severe conditions, the service intervals should be carried out more frequently.

NOTICE: Take particular care to replace all filters regularly. Clean filters mean longer engine running life.

NOTICE: Oils and fluids must be disposed of properly.

Hour meter

The hour meter enables service operations to be scheduled. Its hourly indications are the same as those of a clock when the engine is running.

Servicing intervals are carefully calculated to guarantee safe and efficient machine operation.

Be sure to carry out all the servicing operations properly as defined in this manual.

Variable periodic maintenance

Some working environments require that maintenance be performed more frequently. Dust, dirt, moisture, extreme hot or cold and many other factors should be taken into consideration when servicing the machine. Certain equipment or auxiliary tools may cause more stress on hydraulics, drivetrain, engines or filters. The following maintenance should be performed on regular schedules, but often need special attention when conditions require.

Engine air filter

Replace the primary element if the air filter indicator lamp illuminates.

The primary element may be cleaned, however a new element is recommended, if questionable. The inner element cannot be cleaned and must be replaced.

To periodically clean the primary air filter, hold with the rubber seal facing down. Tap all sides of the filter with your hand. Blow the filter out with compressed air — maximum pressure **4.8 bar (70 psi)**. Hold the nozzle a minimum of **7.6 cm (3 in)** away from filter. Use a nozzle diameter no smaller than **6.4 mm (0.25 in)**. Inspect the filter for damage. Wipe the filter seal off and clean all dust from air cleaner housing. Never use water to clean the primary filter.

Tires and wheels

Adjust the inflation pressure of the tires when circumstances require. Keep tires properly inflated and check torque of wheel bolts/studs.

Wheels should be checked for proper torque every twenty hours when new and until they remain tight.

Air conditioning condenser

The air conditioning condenser is located in the cooling box at the rear of the machine. Use compressed air to remove debris and build up on the condenser.

Fuel cooler

The fuel cooler is located in the cooling box at the rear of the machine. Use compressed air to remove debris and build up that may impede proper function of the cooler.

Fuel prefilter

Raise the engine hood and drain water and sediment from the fuel prefilter. Slowly loosen the drain valve located under the filter until clean fuel runs out.

Retighten the valve and replace connectors. Do not over-tighten valve. This procedure should be a periodic maintenance procedure dependent upon climate and use conditions. See the complete procedure for the fuel prefilter and fuel filter in this section.

Priming the fuel system

Prolonged period of inactivity or running out of fuel may allow air to get into the fuel system. If this should happen make sure the tank is full and then prime the system using the manual priming pump on the fuel pre-filter.

Fuses

Fuses may be reached by opening the access door located on the right side of the cab. If a fuse has blown the indicator light will illuminate.

NOTE: *If a fuse blows, replace it at once. Locate the problem and if it reoccurs, have it checked by a service technician.*

Support strut for loader lift arm [60633940]

Loader lift arm support

⚠ WARNING

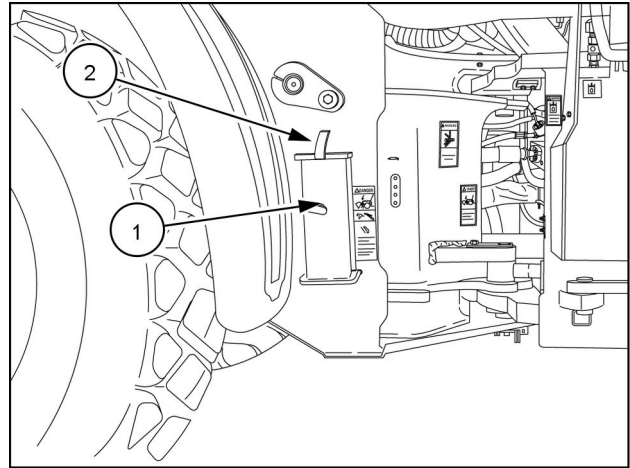
Crushing hazard!

If you service the machine with the loader lift arms raised, always use the support strut. Remove the retaining pin and place the support strut onto the cylinder rod. Install the retaining pin into the support strut. Lower the lift arms onto the support strut.

Failure to comply could result in death or serious injury.

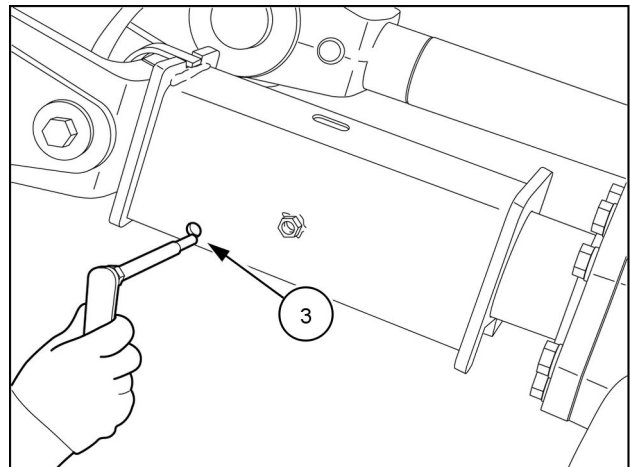
W0230A

1. Empty the loader bucket, raise the loader lift arms to approximately **2.1 m (7 ft)** and stop engine.
2. Remove the support strut **(1)** from the storage position by removing the retaining bolt.



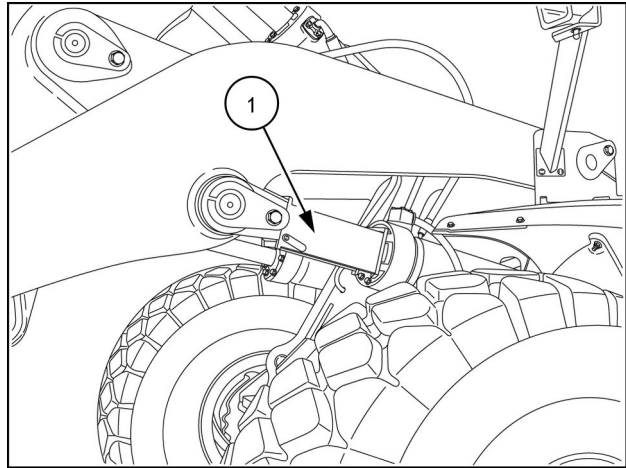
NOTE: Support strut in transport position.

3. Place the support strut **(1)** on to the cylinder rod with the guide lock tab **(2)** on top of cylinder and pointing toward the bucket.
4. Install the retaining bolt entirely into the support strut using all threads **(3)**.



NOTE: Support strut and bolt.

3. Slowly lower the lift arms onto the support strut.

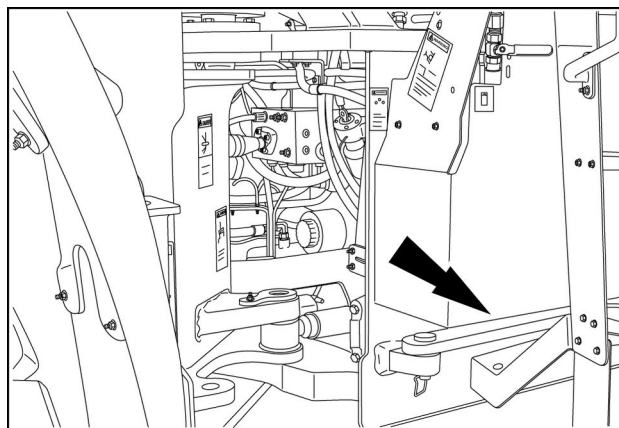


RCPH11WHL041AAH 3

NOTE: Support strut in service position.

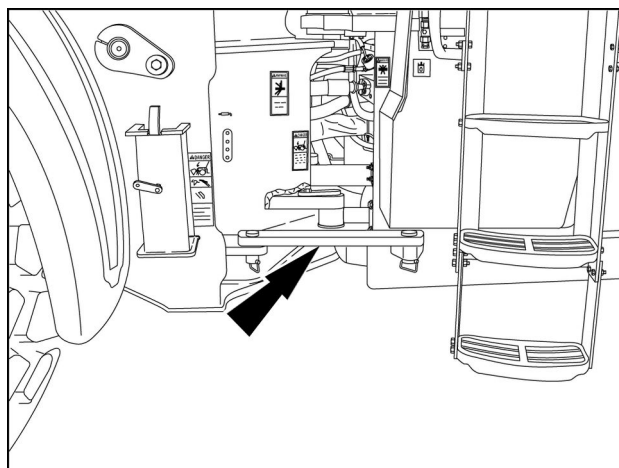
Transport service link

Prior to any maintenance, service work or transportation, lock the articulation transport service link. Remove the safety security pin to change positions of the service link.



RCPH11WHL062AAH 4

NOTE: Service link in operating position.



RCPH11WHL039AAH 5

NOTE: Service link in locked position.

Releasing pressure in the hydraulic system [60633996]

⚠ WARNING

Pressurized hydraulic fluid can penetrate the skin and cause severe injuries.

Hydraulic fluid is under extreme pressure. Rest the bucket or attachment on the ground. Shut the engine off, turn the key on, and move the hydraulic control lever through all movements several times to relieve residual pressure in the system.

Failure to comply could result in death or serious injury.

W0161A

⚠ WARNING

Escaping fluid!

Hydraulic fluid or diesel fuel leaking under pressure can penetrate the skin and cause infection or other injury. To prevent personal injury: Relieve all pressure before disconnecting fluid lines or performing work on the hydraulic system. Before applying pressure, make sure all connections are tight and all components are in good condition. Never use your hand to check for suspected leaks under pressure. Use a piece of cardboard or wood for this purpose. If injured by leaking fluid, see your doctor immediately.

Failure to comply could result in death or serious injury.

W0178A

⚠ WARNING

Escaping fluid!

Do not disconnect hydraulic quick coupler under pressurized conditions. Make sure all hydraulic pressure is removed from the system before disconnecting hydraulic quick coupler.

Failure to comply could result in death or serious injury.

W0095A

⚠ WARNING

Burn hazard!

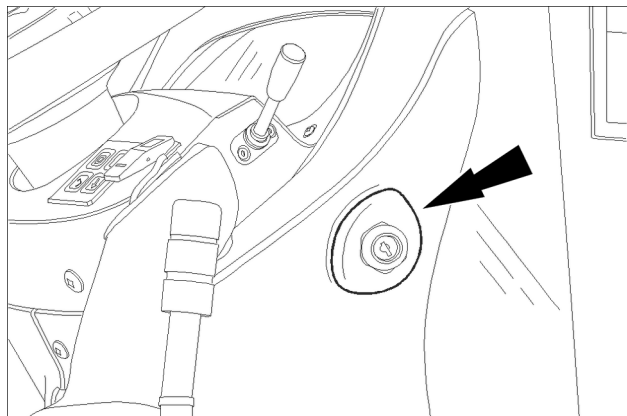
Before performing any service on the hydraulic system, you must allow it to cool. Hydraulic fluid temperature should not exceed 40 °C (104 °F).

Failure to comply could result in death or serious injury.

W0241A

Releasing pressure in the hydraulic system

1. Park the machine on firm, level ground, lower the bucket/attachment to the ground and stop the engine.
2. Keep all non-authorized personnel clear of the machine. Turn the ignition switch key to the "ON" position. Pilot control switch must be ON.

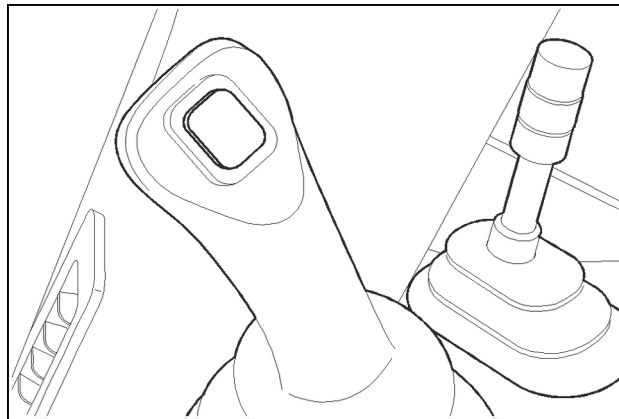


RCPH10WHL114BAL 1

7 - MAINTENANCE

3. Operate the control levers from right to left and front to rear approximately a dozen times. Turn the ignition key to the OFF position. Pump brakes approximately 30 times to bleed accumulators. Bleed ride control accumulator (if equipped) with bleed screw.

NOTICE: Before carrying out any service work on the hydraulic system, it is necessary to allow the system to cool (the temperature should not be more than **40 °C (104.0 °F)**).



RCPH10WHL119BAL 2

Fluids and lubricants [60634041]

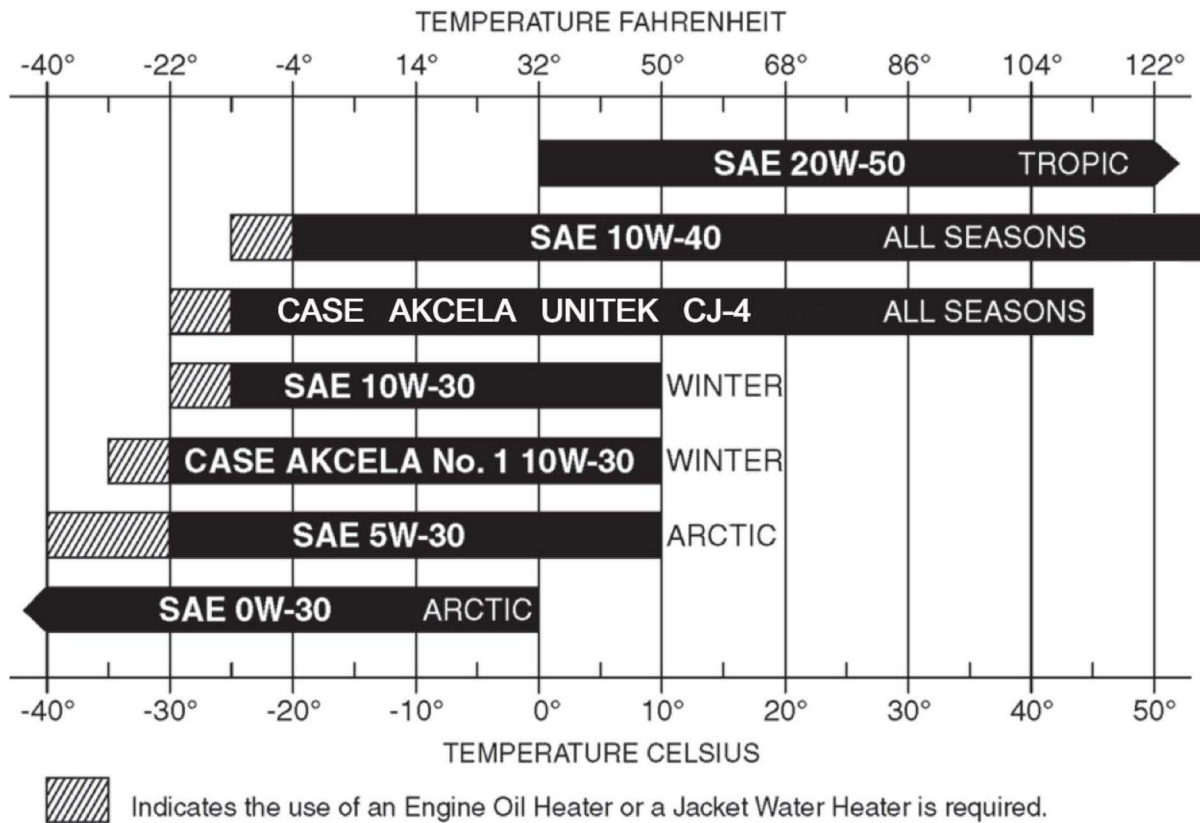
1021F Capacities and specifications

Engine		
	Type of oil	Akcela Unitek CJ-4 engine oil
	Capacity (with filter change)	28.5 l (30.1 US qt)
Cooling system		
	Type of coolant	CASE AKCELA PREMIUM ANTI-FREEZE OR CASE AKCELA ACTIFULL OT® EXTENDED LIFE COOLANT
	System capacity	56.8 l (60.0 US qt)
Fuel system		
	System capacity	473.0 l (125.0 US gal)
Hydraulic system		
	Type of fluid	Akcela HY-TRAN ULTRACTION
	Total system capacity	250.0 l (66.0 US gal)
	Reservoir capacity	134.0 l (35.4 US gal)
Transmission		
	Type of oil	Akcela NEXPLORE™ fluid
	Service capacity - with filter change	45.4 l (48.0 US qt)
Axles		
	Type of oil	Akcela NEXPLORE™ fluid
	Front axle	42.0 l (44.4 US qt)
	Rear axle	42.0 l (44.4 US qt)
	Front axle with axle cooler	45.7 l (48.3 US qt)
	Rear axle with axle cooler	45.7 l (48.3 US qt)
	Heavy duty Front axle	62.0 l (65.5 US qt)
	Heavy duty Front axle with cooler	65.7 l (69.4 US qt)
	Grease fittings, as required	Akcela Moly grease

1121F Capacities and specifications

Engine		
	Type of oil	Akcela Unitek CJ-4 engine oil
	Capacity (with filter change)	28.5 l (30.1 US qt)
Cooling system		
	Type of coolant	CASE AKCELA PREMIUM ANTI-FREEZE CASE AKCELA ACTIFULL OT® EXTENDED LIFE COOLANT
	System capacity	56.8 l (60.0 US qt)
Fuel system		
	System capacity	473.0 l (125.0 US gal)
Hydraulic system		
	Type of fluid	Akcela HY-TRAN ULTRACTION
	Total system capacity	250.0 l (66.0 US gal)
	Reservoir capacity	134.0 l (35.4 US gal)
Transmission		
	Type of oil	Akcela NEXPLORE™ fluid
	Service capacity - with filter change	45.4 l (48.0 US qt)
Axles		
	Type of oil	Akcela NEXPLORE™ fluid
	Front axle	64.0 l (67.6 US qt)
	Rear axle	64.0 l (67.6 US qt)
	Front axle with axle cooler	67.7 l (71.5 US qt)
	Rear axle with axle cooler	67.7 l (71.5 US qt)
	Front axle with differential lock	62.0 l (65.5 US qt)
	Front axle with differential lock and axle cooler	65.7 l (69.4 US qt)
	Grease fittings, as required	Akcela Moly grease

Engine oil viscosity/Temperature ranges

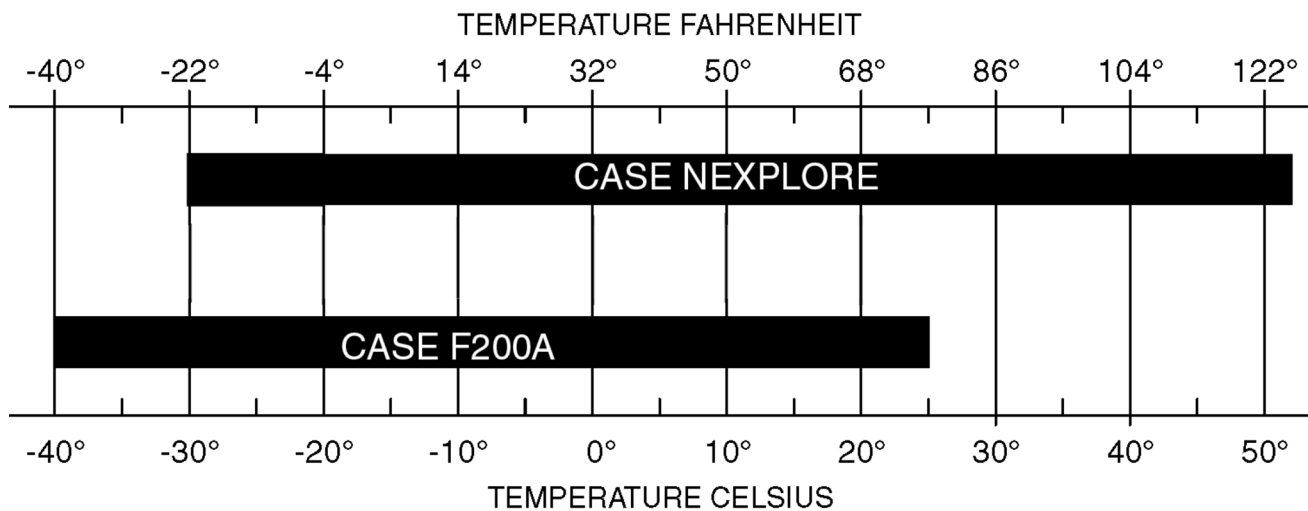


LEIL13WHL0047FA 1

NOTE: Use of an engine oil pan heater or an engine coolant heater may be required when operating temperatures are in Winter or Arctic conditions.

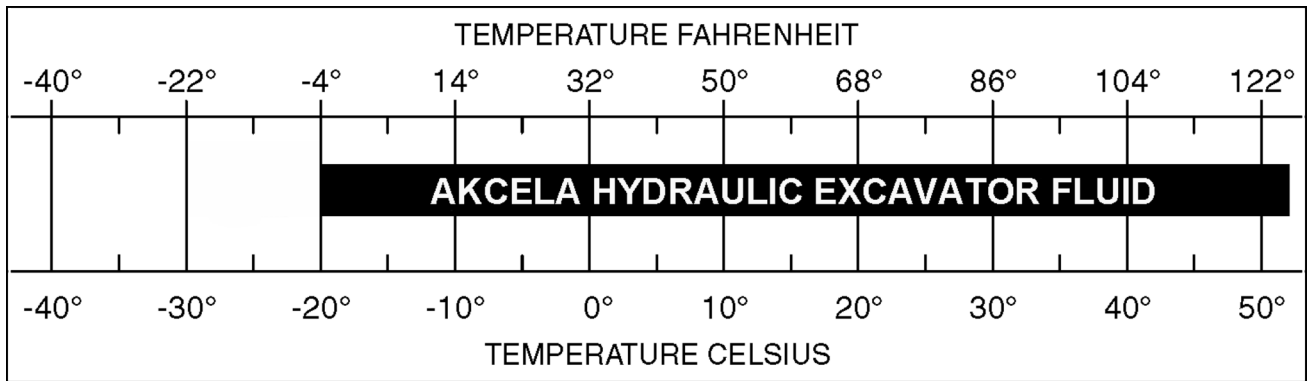
NOTE: The use of low viscosity oils, such as 10W-30 can be used to aid starting the engine and in providing sufficient oil flow at ambient temperatures below -5 °C (23.0 °F). The continuous use of low viscosity oils can decrease engine life due to wear. See the chart above for the correct oil for ambient temperatures.

Transmission oil viscosity/Temperature ranges



RCPH10WHL453BAH 2

Hydraulic/Brake system - temperature range



LEIL12WHL0012BA 3

Engine cooling system

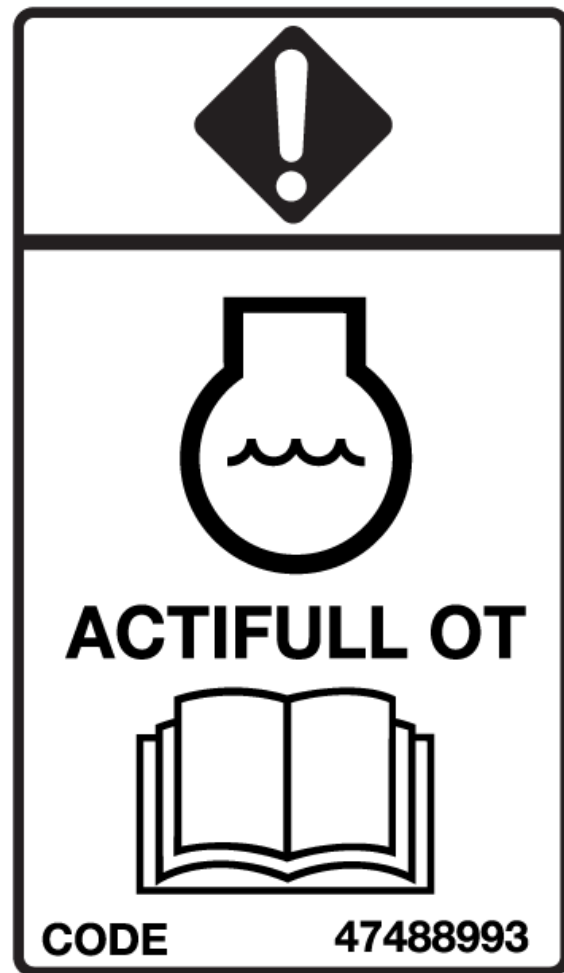
Depending on the date of manufacture, your cooling system may be equipped with conventional ethylene glycol coolant such as **CASE AKCELA PREMIUM ANTI-FREEZE** or an Organic Acid Technology (OAT) coolant solution such as **CASE AKCELA ACTIFULL OT® EXTENDED LIFE COOLANT** which is easily identified by its yellow color. The coolant types should never be mixed. The decal shown below (CNH part number 47488993) is located near the fill point of the cooling system whenever **CASE AKCELA ACTIFULL OT® EXTENDED LIFE COOLANT** is filled at the factory.

The following CNH material specifications must be met for either coolant solution used:

- **MAT3624** for OAT coolant.
- **MAT3620** for conventional coolant.

If you need to change a machine from conventional coolant to OAT coolant or vice versa, you should follow the "Changing coolant types" procedure below to attain the full benefit of the coolant. You should not mix OAT coolant with conventional coolant. Mixing OAT coolant with conventional coolant will reduce the effectiveness of OAT coolant.

NOTICE: Issues as a result of failing to follow the above guidelines will not be covered under warranty.



47488993 4

Changing coolant types

To change coolant from OAT coolant to conventional coolant (or vice versa):

1. Empty the engine cooling system by draining the coolant into a suitable container.
2. Fill the system with clean water.
3. Start the engine and run for at least **30 min**.

NOTE: Ensure the heating system (if equipped) is activated to circulate fluid through the heater core.

4. Repeat Steps 1 to 3, for a total of two washes.
5. Fill the system with conventional coolant (or OAT coolant).
6. Operate the engine until it is warm. Inspect the machine for leaks.
7. If you are changing to OAT coolant, attach the label (CNH part number 47488993) to indicate the use of OAT coolant in the cooling system.

Definitions

Conventional coolant

- A coolant that relies on inorganic inhibitors such as silicates, nitrites and phosphates for corrosion and cavitation protection

Organic Acid Technology (OAT) coolant

- A coolant that relies on inhibitors such as organic acid salts for corrosion and cavitation protection.

Anti-freeze/Anti-corrosion

Use anti-freeze in all seasons to protect the cooling system from corrosion and risk of freezing. For areas where the ambient temperature is over **-36 °C (-32.8 °F)** use a blend of **50 %** ethylene-glycol based anti-freeze.

For areas where the temperature is below **-36 °C (-32.8 °F)** it is advisable to use a blend of **40 %** water and **60 %** anti-freeze.

Fuel

Use diesel fuel suitable for the ambient temperature conditions (ASTM-D-975).

Use fuel which is to ASTM (American Society for Testing and Materials) D975 standard.

Use grade No. 2 fuel. The use of other types of fuel can result in a loss of power of the engine and may cause high fuel consumption.

In very low ambient temperatures, use a mixture of fuels No. 1 and No. 2 as necessary. Consult your fuel supplier for appropriate fuel supply.

If the temperature falls below the fuel cloud point (point at which wax begins to form) the wax crystals will cause power loss or will prevent the engine from starting.

In cold weather, fill the fuel tank at the end of the day's work in order to prevent the formation of condensation.

Coolant solution

Put only ethylene-glycol coolant solution in the cooling system. Use good quality ethylene-glycol that has a high boiling point with no additives to prevent leakage. Do not use non-approved anti-rust additives.

NOTICE: *Anti-rust additives and ethylene-glycol can mix and work against each other, reducing anti-corrosion protection, forming deposits in the cooling system, and causing damage to the cooling system and radiator. Contact your dealer who can supply you with the suitable coolant solution.*

Anti-freeze/Anti-corrosion

Use anti-freeze in all seasons to protect the cooling system from corrosion and risk of freezing. For areas where the ambient temperature is over **-36 °C (-32.8 °F)** use a blend of **50 %** ethylene-glycol based anti-freeze.

For areas where the temperature is below **-36 °C (-32.8 °F)** it is advisable to use a blend of **40 %** water and **60 %** anti-freeze.

Fuel

Use diesel fuel suitable for the ambient temperature conditions (ASTM-D-975).

Use fuel which is to ASTM (American Society for Testing and Materials) D975 standard.

Use grade No. 2 fuel. The use of other types of fuel can result in a loss of power of the engine and may cause high fuel consumption.

In very low ambient temperatures, use a mixture of fuels No. 1 and No. 2 as necessary. Consult your fuel supplier for appropriate fuel supply.

If the temperature falls below the fuel cloud point (point at which wax begins to form) the wax crystals will cause power loss or will prevent the engine from starting.

In cold weather, fill the fuel tank at the end of the day's work in order to prevent the formation of condensation.

Fuel storage

Prolonged storage of fuel can lead to the accumulation of impurities and condensation in the fuel. Engine trouble can often be traced to the presence of water in the fuel.

The storage tank must be placed outside and the temperature of the fuel should be kept as low as possible. Drain off water and impurities regularly.

Hydraulic fluid

Akcela Hydraulic excavator fluid is specifically designed for high pressure applications and for Case hydraulic systems. Your Case Dealer can provide hydraulic fluid to fulfill different climate/temperature conditions. Refer to the charts at the beginning of this section.

Transmission component oil

Extreme pressure oil should be used for enclosed transmission components. Choose an oil that is manufactured for your climate/temperature conditions such as **Akcela NEXPLORE™ fluid** See charts at the beginning of this section.

Grease

The type of grease to use depends on ambient temperature such as: **Akcela Moly grease**.

Environment

Before you service this machine and dispose of oil, fluids, and lubricants, obey environmental regulations. Do not drain oil or fluids on to the ground or into containers that leak. Check with your local environmental, recycling center or your dealer for correct disposal information.

Engine oil

Akcela Unitek CJ-4 engine oil is recommended for your engine. This oil insures correct lubrication of your engine in all working conditions. See charts at the beginning of this section to choose the correct oil for climate/temperatures. If **Akcela Unitek CJ-4 engine oil** cannot be obtained, use only oil of the API SERVICE CI-4 category.

NOTE: *Do not put any Performance Additive or other additive in the sump. Oil change intervals shown in this manual are based on tests carried out utilizing Case lubricants.*

Biodiesel fuel - Biodiesel fuels [60634146]

Biodiesel usage in CASE CONSTRUCTION products

Introduction to Fatty Acid Methyl Ester (FAME) biodiesel

FAME biodiesel, called biodiesel fuel in the following section, consists of a family of fuels derived from vegetable oils treated with methyl esters.

There are two main biodiesel fuel types: Rapeseed Methyl Ester (RME) and Soybean Methyl Ester (SME). RME is a blend of rapeseed and sunflower methyl ester, and is the preferred crop in Europe. SME is the preferred crop in the United States.

Biodiesel fuel is a renewable alternative fuel source. Its use and development is promoted worldwide, especially in Europe and in the United States.

Biodiesel fuel can be used to run diesel engines as pure biodiesel fuel or when blended with standard diesel fuel:

- B5: indicates the blend of **5 %** biodiesel and **95 %** diesel fuels.
- B7: indicates the blend of **7 %** biodiesel and **93 %** diesel fuels.
- B20: indicates the blend of **20 %** biodiesel and **80 %** diesel fuels.
- B100: indicates pure biodiesel, or **100 %** biodiesel fuel. Do not use.

Biodiesel fuel has several positive features in comparison with diesel fuel:

- Biodiesel fuel adds lubricity to the fuel, which is beneficial in many circumstances, particularly as sulfur and aromatics are removed from the fuel.
- Biodiesel has a greater cetane number and burns cleaner.
- Biodiesel produces less particulate matter and reduces smoke emissions.
- Biodiesel is fully biodegradable and non-toxic.

Diesel and biodiesel fuel specifications

Tier 2a diesel fuel specifications are covered by the following:

- **EN 590** - Specification of Diesel fuel. (10 ppm sulfur maximum.)

Biodiesel blends are covered by:

- European Diesel Fuel Specification **EN 590** allows up to **7 %** biodiesel since 2009. European fuel suppliers are allowed to use up to **7 %** biodiesel fuel (B7) to supply the network.

Pure biodiesel (B100) specification is covered by the following requirements:

- Europe: **EN 14214:2009** - Automotive fuels. Fatty Acid Methyl Ester (FAME) for diesel engines. Requirements and test methods.
- **DIN V 51606** - German standard for biodiesel.

Before raw oil can be converted into usable biodiesel fuel, it must undergo transesterification to remove glycerides. During the transesterification process, the oil reacts with an alcohol to separate the glycerine from the fat or vegetable oil. This process leaves behind two products: methyl ester (the chemical name for biodiesel) and glycerine (a byproduct usually sold for use in soaps or other products).

NOTICE: Biodiesel fuels approved for use in the CASE CONSTRUCTION equipment must be transesterified and comply with the European Standard **EN14214** or the German standard **DIN V 51606**.

NOTICE: Cold Pressed Biodiesel, Cold Pressed Oil, Straight Vegetable Oil (SVO), or more generally unrefined vegetable oils used as motor fuel, are fuels that are normally made from Rapeseed oil or similar high oil content crops. These kinds of fuel are not transesterified, so they do not fulfil the **EN14214** requirements. There is no recognized quality standard available for these types of fuel. Therefore the use of Cold Pressed Biodiesel, Cold Pressed Oil, Straight Vegetable Oil (SVO), or more generally unrefined vegetable oils used as motor fuel are **NOT APPROVED** at any blend in any CASE CONSTRUCTION product.

NOTICE: Any engine and fuel injection equipment fitted to a CASE CONSTRUCTION vehicle found to have run with any blend of NON-APPROVED fuel (fuel not fulfilling the specification described in the requirement **EN14214**) will no longer be covered for Warranty by CASE CONSTRUCTION.

Biodiesel fuel usage conditions

You must stringently follow the biodiesel fuel usage conditions. Incorrect application of the biodiesel fuel usage conditions could lead to severe damage to the engine, fuel injection equipment and aftertreatment system.

The main concerns related to operation with biodiesel fuels are:

- Filters and injector blockage caused by poor fuel quality.
- Wear and corrosion of internal components due to water content, which affects lubricity.
- Deterioration of some rubber sealing compounds in the fuel system.
- Biodiesel oxidation, which can lead to the formation of deposits that can harm the fuel injection system.

NOTICE: Any problem in the engine fuel injection equipment associated with non-compliance to the following conditions for biodiesel fuel handling and maintenance will not be covered for Warranty by CASE CONSTRUCTION.

Purchase biodiesel fuel from a trusted supplier who understands the product and maintains acceptable fuel quality. It is highly recommended that you use biodiesel from BQ 9000 accredited suppliers to maintain the quality and consistency of the fuel. The BQ 9000 Quality Management Program is accredited by the National Biodiesel Board for producers and marketers of biodiesel fuel. See the National Biodiesel Board website at www.biodiesel.org for more information.

The use of biodiesel blends above B7 through B20 will not void the CASE CONSTRUCTION warranty as long as the following conditions for biodiesel fuel handling and maintenance are stringently followed:

Biodiesel fuel must be pre-blended by the supplier. Mixing biodiesel fuels on-site can result in an incorrect mixture that could damage the engine and/or fuel system.

NOTICE: CASE CONSTRUCTION may void your warranty if the problem is associated with poor fuel quality

due to improper blending. It is the responsibility of the fuel supplier and/or yourself to ensure the right type of fuel and blend is delivered and used.

Maintenance intervals

For machines using the all electronic engines with a high pressure common rail fuel system, the engine oil and filter change interval is not affected when using biodiesel blends up to B20.

Check all hoses, connections and gaskets to ensure integrity and cleanliness every 3 months or 150 hours of operation, whichever comes first.

Regular oil sampling is highly recommended to monitor for oil and engine deterioration.

NOTE: Oil sampling kits are available from your authorized CASE CONSTRUCTION dealer.

When switching back from biodiesel to regular **EN 590** or #2 diesel, all fuel filter, oil and oil filter should be changed even if this falls between routine service intervals.

MAINTENANCE CHART

Maintenance Chart [60634374]

				Change fluid				
				Adjust				
				Cleaning				
				Drain fluid				
				Replace				
				Grease				
				Check				
Interval	Page no.	Maintenance action	No. of pts.					
Daily inspection	7-18	General		X				
Every 10 hours	7-22	Engine oil level		X				
Every 50 hours	7-23	Bucket/attachment grease fittings			X			
	7-24	Hydraulic oil level		X				
	7-25	Transmission oil level		X				
	7-27	Engine coolant		X				
Initial 100 hours	7-28	Wheel torque		X				
	7-29	Axle cooler filters (if equipped)				X		
	7-31	Fuel filter (Initial)					X	
	7-32	Fuel filters				X		
	7-34	Replace hydraulic oil filter (Initial)				X		
Every 100 hours	7-35	Grease fittings			X			
	7-37	Grease machine and attachments			X			
Every 250 hours	7-39	Grease drive shaft slip joints			X			
	7-40	Cab air filter					X	
	7-42	Engine accessory drive belt		X				
	7-43	Wheels and tires					X	
Every 500 hours	7-45	Engine oil and filter				X		
	7-48	Replace fuel prefilter				X		
	7-49	Fuel filter		X				
	7-51	Fuel tank sediment					X	
	7-52	Axle oil level		X				
	7-53	Roll over protective structure		X				
	7-56	Battery fluid level		X				
Every 1000 hours	7-57	Pivot points			X			
	7-58	Articulation fittings			X			
	7-59	Drive belt						X
	7-61	Cab air filter				X		
	7-63	Replacing the engine breather filter				X		
	7-65	Engine valve clearance		X				
Every 1500 hours	7-66	Change front and rear axle oil					X	
	7-69	Transmission fluid and filters						X
	7-72	Calibrating the gear box						X
	7-73	Transmission declutch pressure adjustment						X
Every 2000 hours	7-74	Hydraulic oil and filter						X
	7-78	Engine coolant						X
	7-80	Engine air filters				X		
	7-83	Frame and cab - lubricate			X			

7 - MAINTENANCE

				Change fluid			
				Adjust			
				Cleaning			
				Drain fluid			
				Replace			
				Grease			
				Check			
Interval	Page no.	Maintenance action	No. of pts.				
As required	7-84	Fuel pre-filter				X	
	7-85	Air conditioning condenser					X
	7-86	Height control and return to travel					X
	7-88	Return to dig					X
	7-90	Parking brake		X			
	7-94	Secondary Steering (optional)		X			
	7-95	Cab service		X			
	7-98	Machine inspection and cleaning				X	
ELECTRICAL SYSTEM	7-99	Battery service				X	
	7-102	Battery electrolyte level		X			
	7-103	Auxiliary battery connections		X			
	7-105	Battery removal and installation			X		
	7-112	Work lights			X		
	7-113	Driving lights			X		
	7-114	Rotating beacon light		X			

Daily inspection

General [60634398]

⚠ WARNING

Improper operation or service of this machine can result in an accident. Read and understand the **SAFETY INFORMATION** Section before you perform any maintenance, service, or repairs. Read and understand the specific service procedures for the components you plan to work with before you start servicing the machine. Failure to comply could result in death or serious injury.

W0138A

Every day, before starting work, it is necessary to inspect the machine and service certain of its components.

General

- Check for water or oil leaks.
- Check that all screws and nuts are correctly tightened.
- Wipe off any dust and clean off any accumulated debris (engine, operator's compartment, etc.).
- Check tires for proper inflation.
- Check for damage.

Engine

- Check the oil level and change the oil, if necessary.
- Check the coolant level at sight gauge.
- Check for clogging or damage to the radiator.
- Check the engine accessory drive belt condition.
- Check that air filter restriction warning is not illuminated on console cluster.
- Check for water or oil leaks on the components.
- Check the condition of all lines.
- Check the fuel tank level.

Other

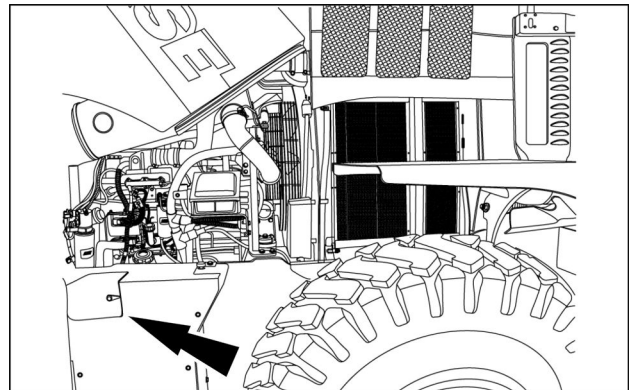
- Check the hydraulic reservoir level.
- Check that the hydraulic oil is clean.
- Check the condition of all lines.
- Check for electrical short-circuits.
- Check that all battery connections are properly tightened.
- Adjust the rear view mirrors.
- Check for oil leaks on the cylinders.
- Check the condition of the bucket/attachment.

After starting the engine

- Did the engine start correctly? Are the exhaust fumes normal? Any strange noises?
- Check for abnormal noise on the hydraulic components.
- Check for water, fuel, or oil leaks on the components.
- Check the audible alarm devices, working lights and windshield wipers.
- Check that all hydraulic circuits are functioning correctly.

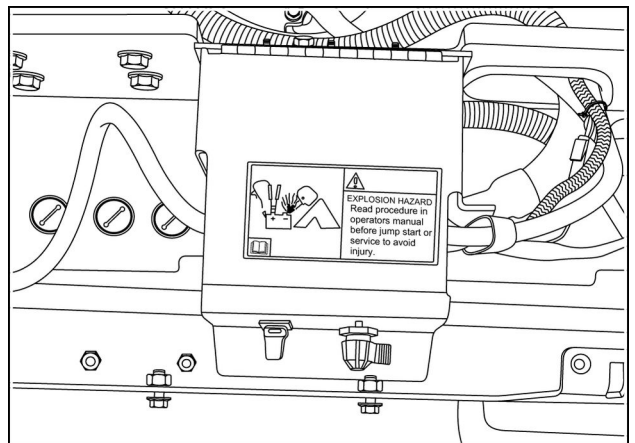
Access doors and fill locations

1. Engine hood - right side
Fuel fill, oil fill



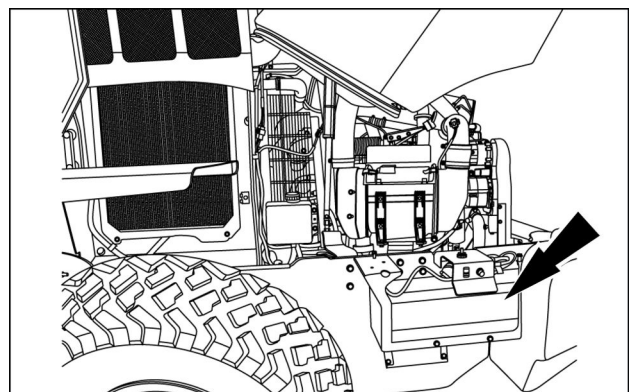
RCPH10WHL152AAH 1

2. Battery access left side



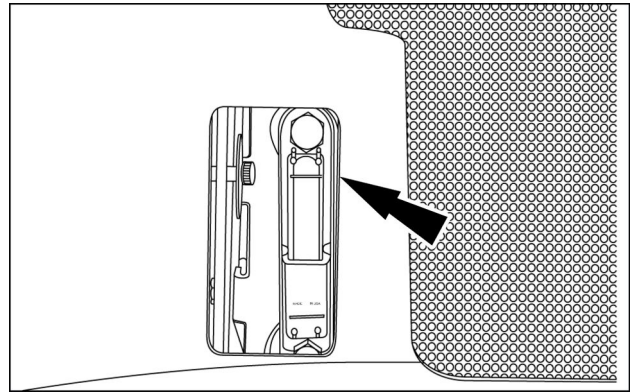
RCPH10WHL421AAH 2

3. Engine hood - left side
Electronic disconnect, air filter, transmission oil cooler



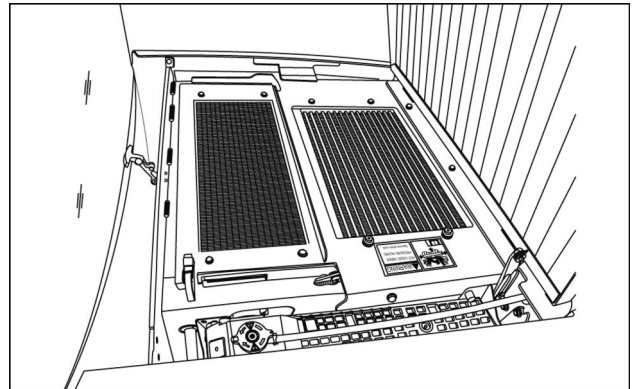
RCPH10WHL151AAH 3

4. Hydraulic fluid gauge and access door right side



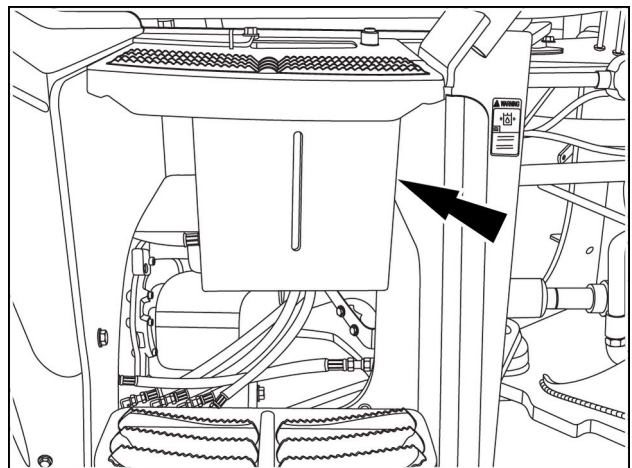
RCPH10WHL102AAH 4

5. Coolant and hydraulic fills



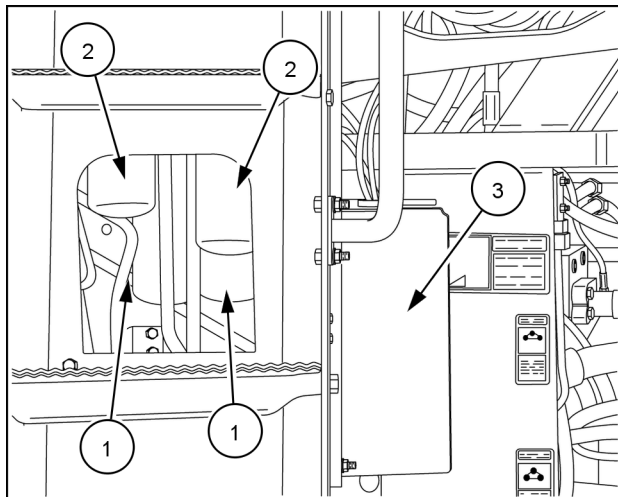
RCPH10WHL139AAH 5

6. Windshield fluid bottle access right side (if equipped)



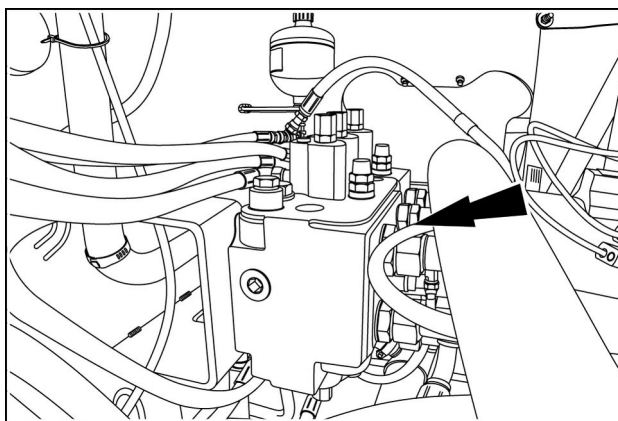
RCPH10WHL429AAH 6

7. Right shield beneath steps Transmission filters **(1)** , axle cooler filters **(2)** (if equipped), windshield fluid bottle **(3)**



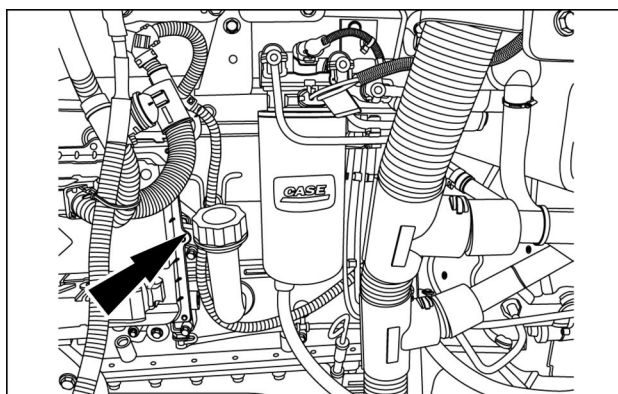
RCPH11WHL114AAH 7

8. Hydraulic valve access



RCPH10WHL426AAH 8

9. Engine oil fill location



RCPH10WHL115AAH 9

Every 10 hours

Engine oil level [60634473]

Service specifications	
Type of oil	Akcelo Unitek CJ-4 engine oil
1021F with filter change	28.5 l (30.1 US qt)
1121F with filter change	28.5 l (30.1 US qt)

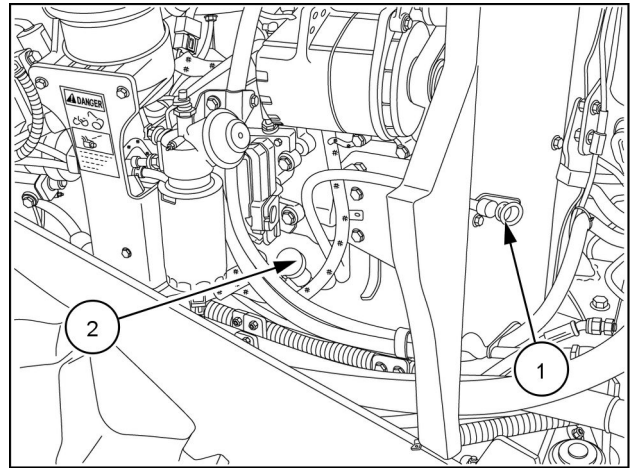
The engine oil level should be checked every 10 hour shift or each day, whichever occurs first.

The engine oil dip stick **(1)** is located on the left side of the engine, above the fuel fill location.

1. Keep all non-authorized personnel clear of the area. Park the machine on a firm, level surface and turn off the engine. Remove the dipstick to check the engine oil level. Wipe the dipstick clean and reinsert. The oil level should register at the full mark.

NOTE: This procedure is best performed at the beginning of the work day with the engine cool and all oil drained to the pan

2. The fill location **(2)** is located in the main engine compartment. Add oil, if necessary. Do not overfill engine oil.



RCPH11WHL089AAH 1

Every 50 hours

Bucket/attachment grease fittings [60634532]

⚠ WARNING

Avoid injury! Always do the following before lubricating, maintaining, or servicing the machine.

1. Disengage all drives.
 2. Engage parking brake.
 3. Lower all attachments to the ground, or raise and engage all safety locks.
 4. Shut off engine.
 5. Remove key from key switch.
 6. Switch off battery key, if installed.
 7. Wait for all machine movement to stop.
- Failure to comply could result in death or serious injury.**

W0047A

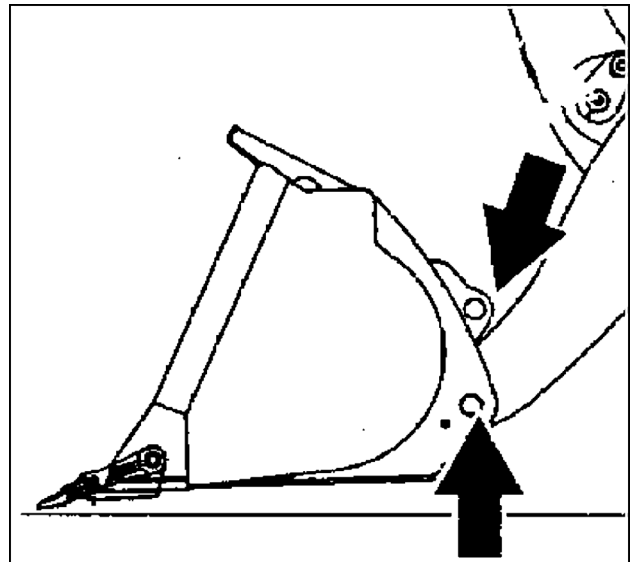
Grease the attachment fittings when the hour meter registers 50 hours of operation or sooner if conditions so require.

Prior operation:

Always have the machine on firm, level ground with the bucket/attachment on the ground. Make sure all residual pressure is relieved from circuits before beginning maintenance.

Service specifications	
Grease	Akcelar Moly grease

Clean around the area to be greased before service. In severe conditions, such as immersion in water, it may be necessary to grease more frequently.



RCIL10WHL229BAL 1

Hydraulic oil level [60634601]

⚠ WARNING

Pressurized hydraulic fluid can penetrate the skin and cause severe injuries.

Hydraulic fluid is under extreme pressure. Rest the bucket or attachment on the ground. Shut the engine off, turn the key on, and move the hydraulic control lever through all movements several times to relieve residual pressure in the system.

Failure to comply could result in death or serious injury.

W0161A

Check the level of the hydraulic oil tank every 50 hours.

Prior operation:

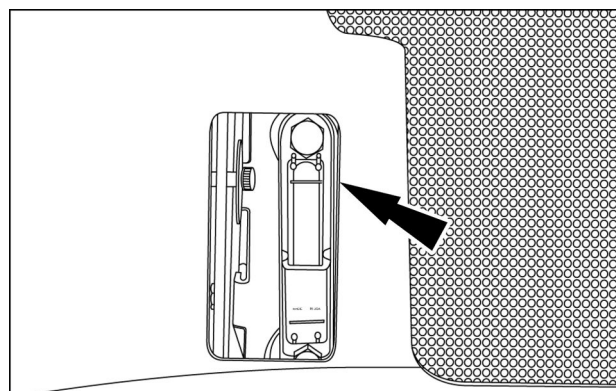
Keep all non-authorized personnel clear of the area. Park the machine on level ground, in neutral with the parking brake applied and the attachment lowered to the ground.

Service specifications

Type of oil	Akcela Hydraulic excavator fluid
1021F total system capacity	250.0 l (66.0 US gal)
1121F total system capacity	250.0 l (66.0 US gal)

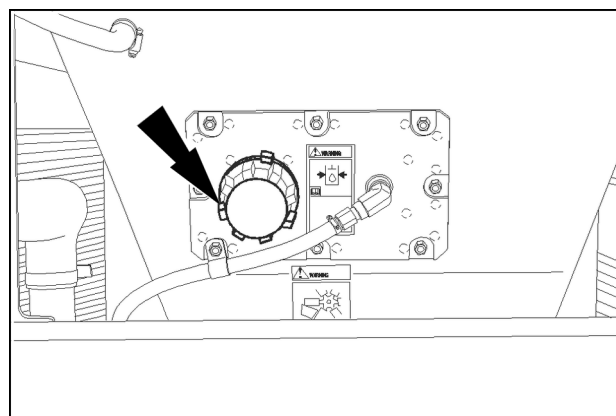
Fluid level check

1. Check the oil level in the sight gauge, before you start the engine. If the oil is cold, the level is correct when the top of the oil is aligned with the lower indicator mark. If the oil is at operating temperature, the level is correct when the top of the oil is aligned with the upper indicator mark.



RCPH10WHL102AAH 1

2. If oil is required, relieve all pressure in the system. Slowly loosen the tank cap, and top off until the proper oil level is reached. The hydraulic oil fill cap is located under the condenser core behind the operator's cab.



RCPH10WHL099BAL 2

Transmission oil level [60634648]

Check the transmission oil level every 50 hours of operation.

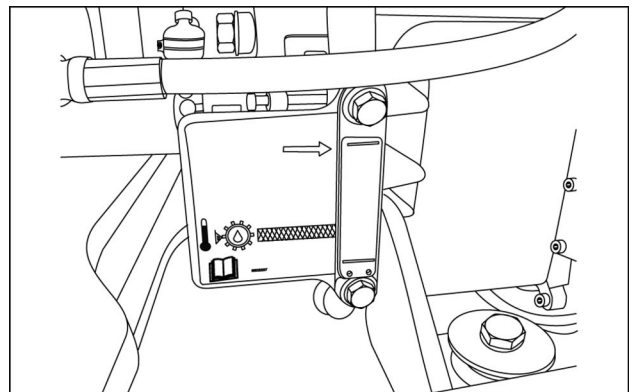
Prior operation:

Keep all non-authorized personnel clear of the area. Park the machine on level ground, in neutral with the parking brake applied and the attachment lowered to the ground. The transmission oil level sight gauge is on the left side of the machine.

Service specifications	
Type of oil	Akcelo NEXPLORE™ fluid
1021F Capacity	45.4 l (48.0 US qt)
1121F Capacity	45.4 l (48.0 US qt)

Cold oil level check

Before you start the engine, check the transmission oil level in the sight gauge. If the oil level is below the arrow, add oil to raise the oil level up to the arrow.



RCPH10WHL141AAH 1

Engine running check

WARNING

Hazard to bystanders!

Make sure the area surrounding the machine is clear of all persons before starting the engine. Failure to comply could result in death or serious injury.

W0090A

1. Keep all non-authorized personnel clear of the area. Park the machine on level ground, in neutral with the parking brake applied and the attachment lowered to the ground. The pilot lock out should be engaged to neutralize hydraulic flow.
2. Place the transportation/service link in the service position in order to prevent unexpected articulation.
3. Locate the transmission oil level sight gauge on the left side of the machine.
4. Ventilate properly to reduce the deadly exhaust fumes, if this check is to be performed in an enclosed area,
5. Check the transmission oil level at idle speed with the oil temperature of **65 - 70 °C (149.0 - 158.0 °F)**. The oil level should rise to the top of the gauge. Oil level should be between the bottom and top of the cross hatch region.
6. Add oil if necessary. Do not overfill.

Engine coolant [60634698]

⚠ WARNING

Burn hazard!

Hot coolant can spray and scald if you remove the radiator or deaeration tank cap while the system is hot. To remove the cap: allow the system to cool, turn the cap to the first notch, and wait for all pressure to release. Remove the cap only after all pressure has released.

Failure to comply could result in death or serious injury.

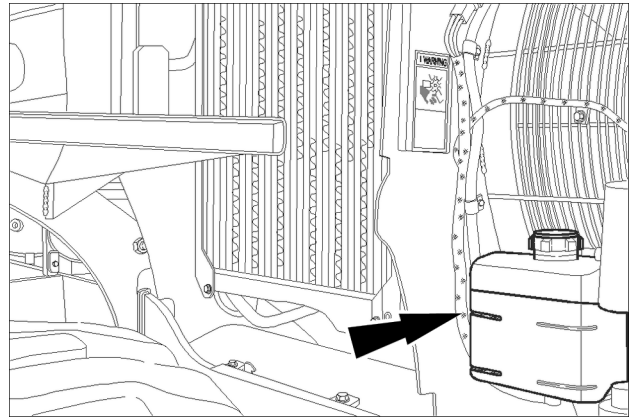
W0367A

Prior operation:

Keep all non-authorized personnel clear of the area. Park the machine on level ground, in neutral with the parking brake applied and the attachment lowered to the ground. The transmission oil level sight gauge is on the left side of the machine.

Service specifications	
1021F Coolant capacity	56.8 l (60.0 US qt)
1121F Coolant capacity	56.8 l (60.0 US qt)

Check the coolant reservoir level every 50 hours of operation. Perform this check when the coolant is cold and the engine is stopped. Do not remove the radiator cap during this check. The coolant level must be between the full and add marks on the reservoir. Add coolant as required to raise the coolant level to the full mark.



RCPH10WHL048BAL 1

NOTE: In the event that the system needs topping off make sure to use the proper ratio of water and antifreeze/coolant. Do not overfill.

Initial 100 hours

Wheel torque [60634745]

⚠ WARNING

Explosion hazard!

Never weld on a wheel. Welding can cause stresses that will cause a wheel to crack or break unexpectedly. Tires can separate explosively during welding. Always have a qualified tire mechanic service wheels and tires.

Failure to comply could result in death or serious injury.

W0124A

Tire or rim service

Always have a qualified tire technician service the tires and rims for this machine. It is recommended that you have this technician inflate the tires. To prevent accidents, use a restraining device (tire inflation cage), correct equipment, and correct procedure. Explosive separation of the tire (single piece rim) or the tire and / or rim parts (multi-piece rim) can cause serious injury or death.

Stud mounted wheels

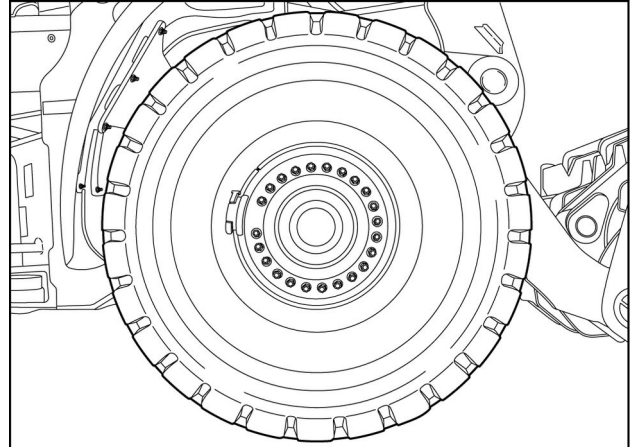
Machines are equipped with stud mounted wheels. Wheel studs offer greater strength due to an increase in clamping force and resistance to loosening.

Wheel bolt torque

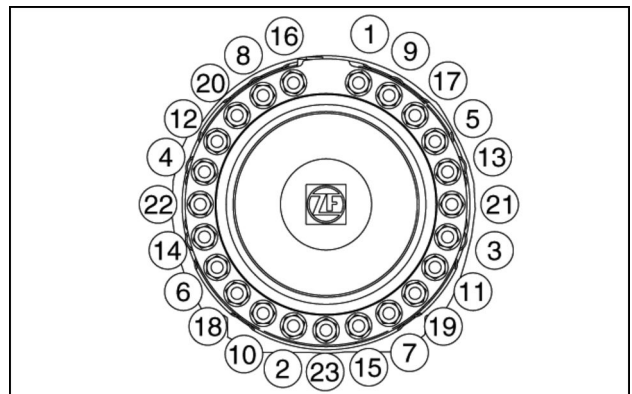
If the machine is new or if a wheel has been removed and installed, check the torque of the wheel bolts during the run-in period until bolts are stable.

Use a hand wrench (not an impact) to tighten wheel bolts to pull the wheel against the planetary housing.

Tighten the wheel bolts using the sequence shown. First tighten the bolts to **278 N·m (205.0 lb ft)**, then tighten to a final torque of **640 - 720 N·m (472.0 - 531.0 lb ft)**, using the same sequence.



RCPH11WHL073AAH 1



LEEN11T0189AA 2

Axle cooler filters (if equipped) [60634800]

⚠ WARNING

Pressurized hydraulic fluid can penetrate the skin and cause severe injuries. Hydraulic fluid is under extreme pressure. Rest the bucket or attachment on the ground. Shut the engine off, turn the key on, and move the hydraulic control lever through all movements several times to relieve residual pressure in the system. Failure to comply could result in death or serious injury.

W0161A

⚠ WARNING

Pressurized fluid can penetrate the skin and cause severe injuries. Keep hands and body away from any pressurized leak. DO NOT use your hand to check for leaks. Use a piece of cardboard or paper. If fluid penetrates the skin, seek medical attention immediately. Failure to comply could result in death or serious injury.

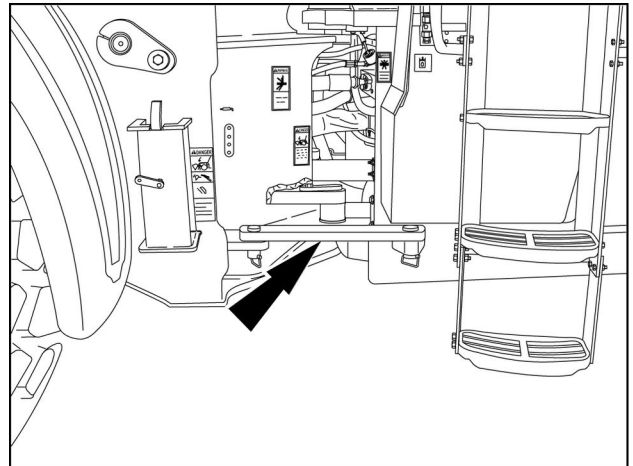
W0158A

Replace the axle cooler filters when the hour meter registers 100 hours for a new machine during the initial run-in period. The filters should be changed every 1000 hours thereafter or more frequently when operating conditions are severe.

Prior operation:

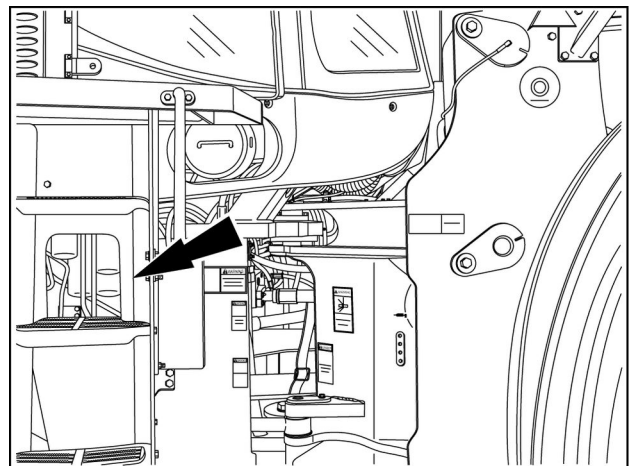
Keep all non-authorized personnel clear of the area. Park the machine on level ground in neutral with the parking brake applied and the attachment lowered to the ground. Turn the engine off.

1. Install the transport/service link into the lock position.



RCPH11WHL039AAH 1

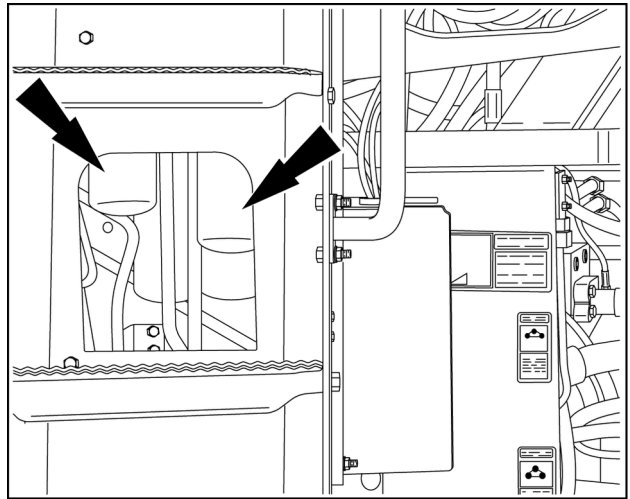
2. Locate the axle cooler filters on the right side of the machine under the steps. Remove the cover for easier access to the filters, if desired.



RCPH11WHL113AAH 2

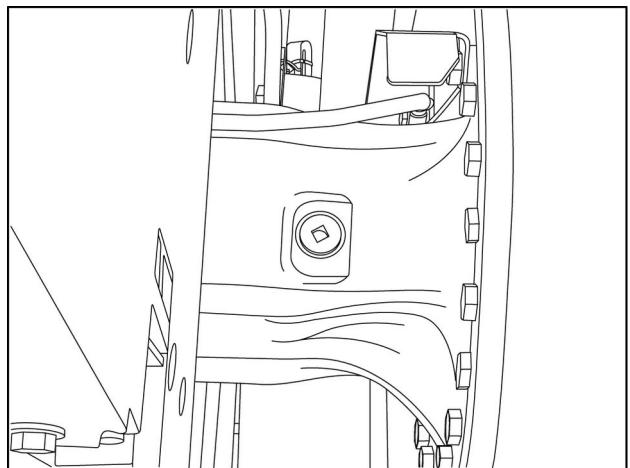
7 - MAINTENANCE

3. Turn the filters counterclockwise to remove.
4. Lubricate the gasket of the new filter with clean oil and install. After the filter makes contact with the filter head, tighten an additional 1/2 turn.



RCPH11WHL114AAH 3

5. Start the engine and run at **1000 RPM**. Have an assistant check for leaks around the filter area. Stop the engine and check the oil level in the axles.
6. To check axle oil, remove the oil plug from the axle center section on the front axle.
7. Remove the oil plug from the end of the rear axle beam. Oil level should be level with the bottom of the plug. Top off if necessary.
8. Clean and install the plug.



RCPH11WHL228AAH 4

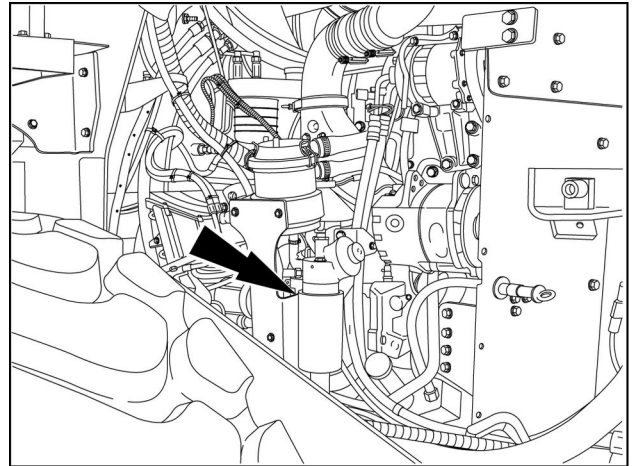
NOTICE: *Never use a filter wrench to tighten a new filter on install.*

⚠ WARNING

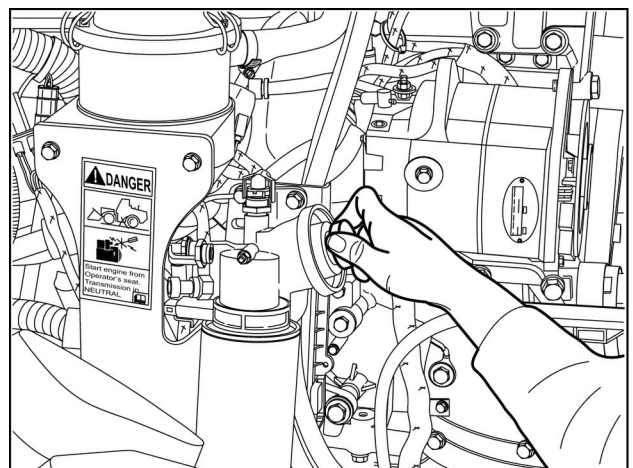
Do not smoke while handling fuel. Keep fuel away from flames or sparks. Shut off engine and remove key before servicing. Always work in a well-ventilated area. Clean up spilled fuel immediately. Failure to comply could result in death or serious injury.

W0904A

1. Change the fuel prefilter when the machine hour meter registers 100 hours when the machine is new during the initial run-in period. Change the fuel prefilter every 500 hours thereafter or more often if conditions so require or if fuel quality is poor. The prefilter is located on the left side of the machine.
2. Remove connector. Open the drain valve on the fuel prefilter by turning counterclockwise two or three turns.
3. Drain the water and/or contaminants from the prefilter into a suitable container until clean fuel flows. Do not allow fuel to spill on engine or ground.
4. Turn the filter counterclockwise to remove.
5. Replace with a new filter cartridge, turning clockwise until the cartridge meets the filter head. Hand tighten firmly in place. Do not use a wrench to tighten. Replace connector at bottom of filter.
6. To bleed air from the system, use the pump at the top of the filter. Pump until fuel flows without air bubbles.



RCPH11WHL294AAH 1



RCPH11WHL244AAH 2

Fuel filters - Replace [60634906]

⚠ WARNING

Fire hazard!

When handling diesel fuel, observe the following precautions:

1. Do not smoke.
2. Never fill the tank when the engine is running.
3. Wipe up spilled fuel immediately.

Failure to comply could result in death or serious injury.

W0099A

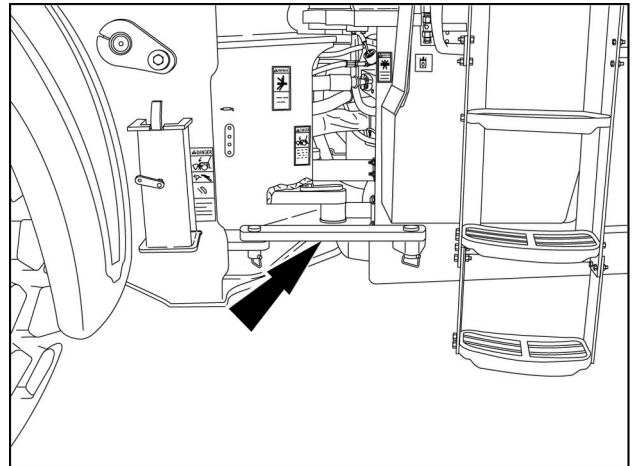
Change the fuel filter when the hour meter registers 100 hours for a new machine during the initial run-in period. Filters should be changed every 500 hours thereafter or more frequently when operating conditions are severe.

Clean the filter head area, the outside of the filter and remove any dirt and debris around the area that might contaminate the system.

Prior operation:

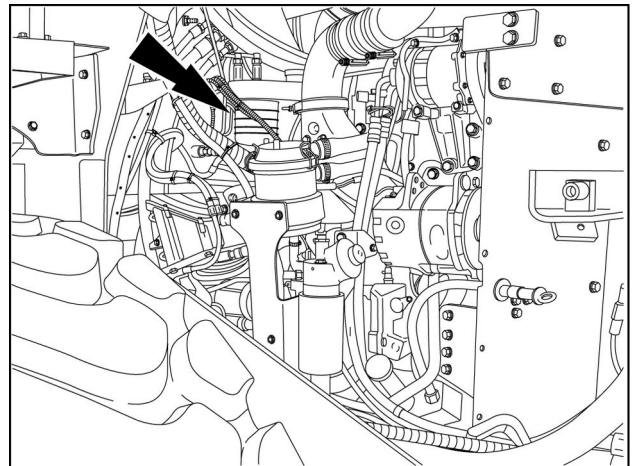
Keep all non-authorized personnel clear of the area. Park the machine on level ground, in neutral with the parking brake applied and the attachment lowered to the ground.

1. Install the transport/service link into the lock position.



RCPH11WHL039AAH 1

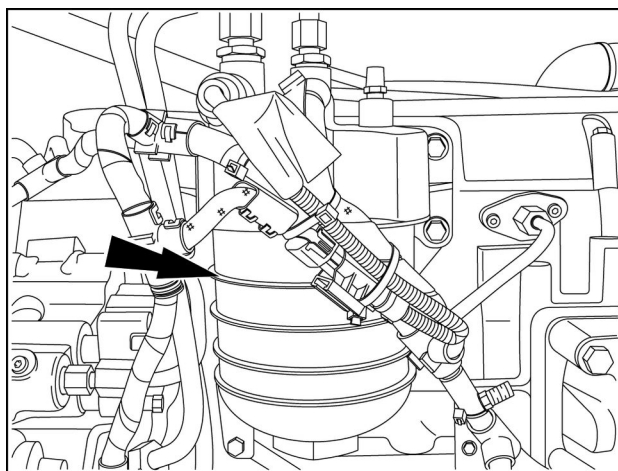
2. Locate the fuel filter on the left side of machine.



RCPH11WHL294AAH 2

7 - MAINTENANCE

3. Turn the filter housing counterclockwise and remove. Remove the filter cartridge and discard. Be sure to capture any fuel remaining in the lines or the filter and discard properly.
4. Replace filter cartridge. Apply a thin layer of clean oil to the gasket.
5. Install the filter housing . Use your hands to tighten the filter 1/2 to 3/4 turn after the filter makes contact with the filter head.



RCPH11WHL292AAH 3

Replace hydraulic oil filter (Initial) [60634950]

⚠ WARNING

Pressurized hydraulic fluid can penetrate the skin and cause severe injuries. Hydraulic fluid is under extreme pressure. Rest the bucket or attachment on the ground. Shut the engine off, turn the key on, and move the hydraulic control lever through all movements several times to relieve residual pressure in the system. Failure to comply could result in death or serious injury.

W0161A

⚠ WARNING

Pressurized fluid can penetrate the skin and cause severe injuries. Keep hands and body away from any pressurized leak. DO NOT use your hand to check for leaks. Use a piece of cardboard or paper. If fluid penetrates the skin, seek medical attention immediately. Failure to comply could result in death or serious injury.

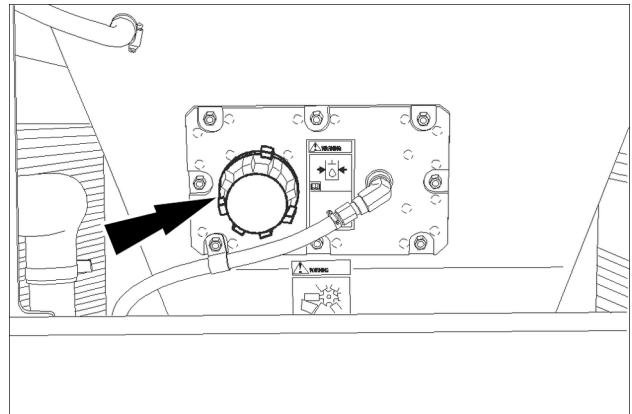
W0158A

Replace the hydraulic oil filter when the hour meter registers 100 hours for a new machine during the initial run-in period. The filter should be changed every 1000 hours thereafter or more frequently when operating conditions are severe.

Prior operation:

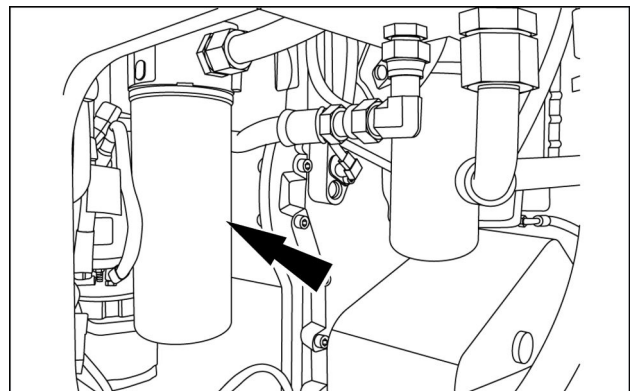
Keep all non-authorized personnel clear of the area. Park the machine on level ground in neutral with the parking brake applied and the attachment lowered to the ground.

1. Release pressure in the hydraulic system. Install the transport/service link into the lock position.
2. Slowly loosen the filler cap on the hydraulic reservoir to release any residual pressure in the reservoir. Leave it loose during the procedure.
3. Turn the filter counterclockwise to remove. Lubricate the gasket and threads of the new filter with clean oil and install. After the filter makes contact with the filter head tighten 1/2 to 3/4 turns.
4. Tighten the cap on the hydraulic reservoir.



RCPH10WHL099BAL 1

5. Start the engine and run at **1000 RPM**. Have an assistant check for leaks around the filter area. Stop the engine and check and hydraulic level. Top off if necessary.



RCPH10WHL127AAH 2

NOTICE: Never use a filter wrench to tighten a new filter on install.

Every 100 hours

Grease fittings [60635004]

⚠ WARNING

Improper operation or service of this machine can result in an accident. Read and understand the **SAFETY INFORMATION** Section before you perform any maintenance, service, or repairs. Read and understand the specific service procedures for the components you plan to work with before you start servicing the machine. Failure to comply could result in death or serious injury.

W0138A

⚠ DANGER

Crushing hazard!

If you service the machine with the loader lift arms raised, always use the support strut. Remove the retaining pin and place the support strut onto the cylinder rod. Install the retaining pin into the support strut. Lower the lift arms onto the support strut.

Failure to comply will result in death or serious injury.

D0084A

⚠ WARNING

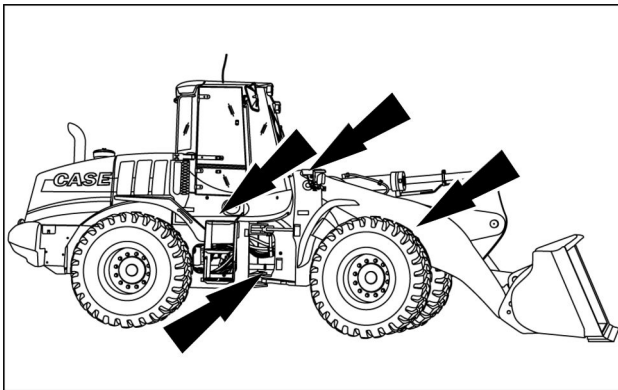
Avoid injury! Always do the following before lubricating, maintaining, or servicing the machine.

1. Disengage all drives.
2. Engage parking brake.
3. Lower all attachments to the ground, or raise and engage all safety locks.
4. Shut off engine.
5. Remove key from key switch.
6. Switch off battery key, if installed.
7. Wait for all machine movement to stop.

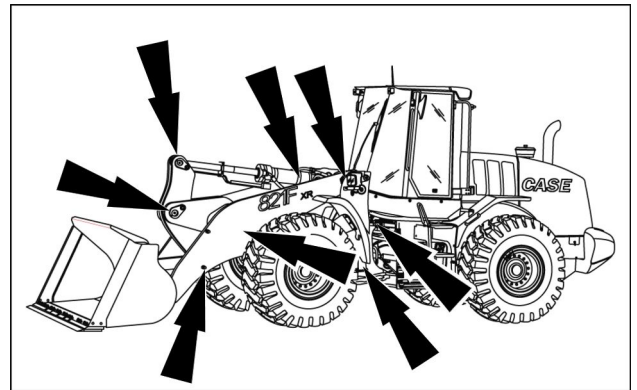
Failure to comply could result in death or serious injury.

W0047A

Machine grease fittings



RCPH10WHL096AAH 1



RCPH10WHL094AAH 2

Machine grease fittings

Service specifications	
Grease Specification	Akcel Moly grease

Grease the machine fittings when the hour meter registers 100 hours of operation or sooner if conditions so require.

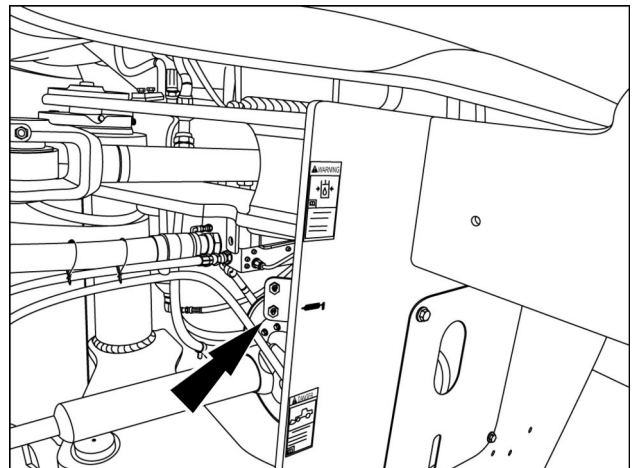
Clean around the area to be greased before service. Grease the bucket/attachment pivot pins, front driveshaft support bearing (remote), and steering cylinder pins (rod end)

Remote grease locations

Grease the steering cylinder pins (remote), boom pivot pins, bucket cylinder pins (remote) and the boom pivot pins.

NOTICE: In severe conditions, such as immersion in water, it may be necessary to reduce the greasing service intervals.

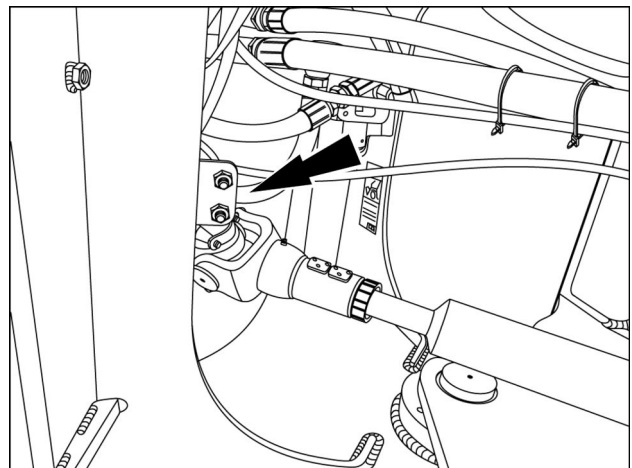
Steering cylinder remote grease location
Axle trunnion



RCPH10WHL457AAH 3

Drive shaft carrier bearing and tilt cylinder

Grease the drive shaft carrier bearing and the tilt cylinder the remote grease locations.



RCPH10WHL456AAH 4

Grease machine and attachments [60635046]

Machine grease fittings

Service specifications	
Grease Specification	Akcelá Moly grease

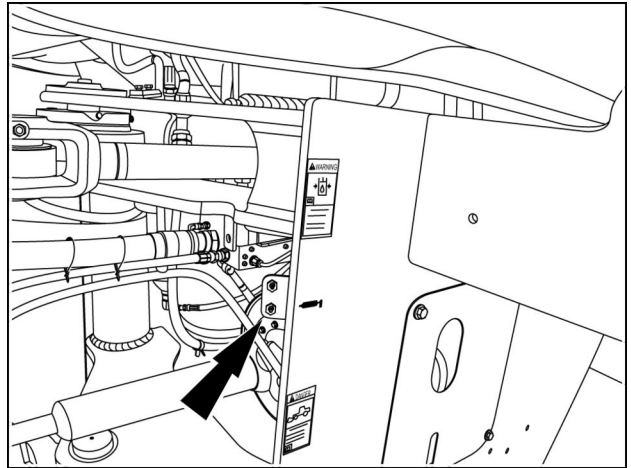
Grease the machine at the remote locations when the hour meter registers 50 hours.

Clean around the area to be greased before service.

NOTE: In severe conditions, such as immersion in water, it may be necessary to reduce the greasing service intervals.

Steering cylinder

Steering cylinder remote grease location. (Rear left of machine)

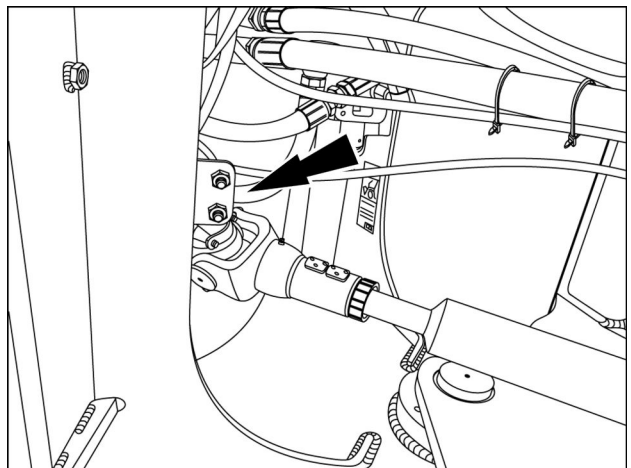


RCPH10WHL457AAH 1

Drive shaft carrier bearing

Tilt cylinder

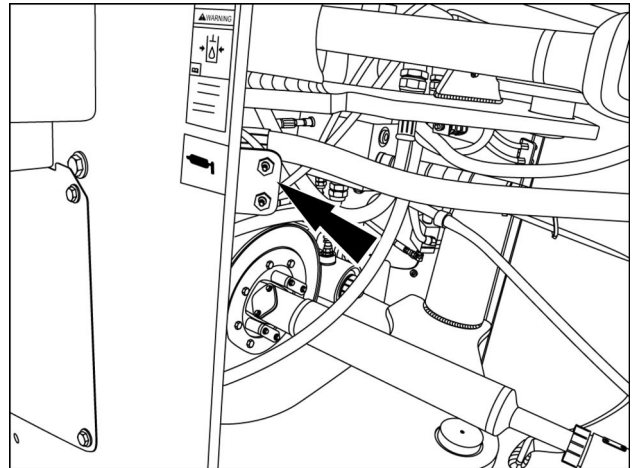
Grease the drive shaft carrier bearing and the tilt cylinder at the remote grease locations. (Front left of machine)



RCPH10WHL456AAH 2

Rear axle trunnion

Grease the axle oscillation at t the remote grease locations.
(Rear right of machine)



RCPH10WHL458AAH 3

Every 250 hours

Grease drive shaft slip joints [60635121]

Machine grease fittings

Service specifications	
Grease Specification	Akcela Moly grease

Grease the drive shaft slip joints when the hour meter registers 250 or more often if conditions so require.

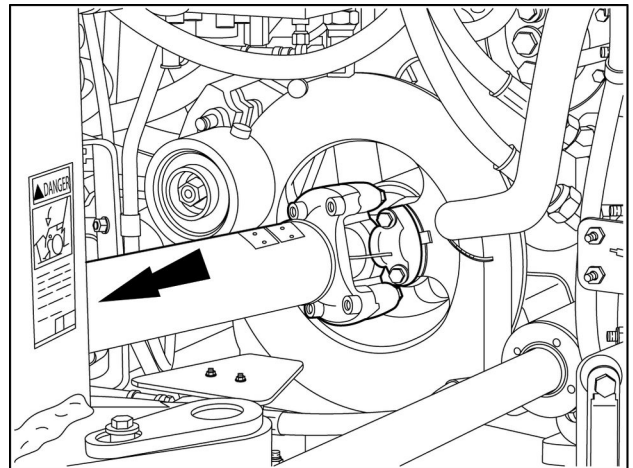
Clean around the area to be greased before service.

NOTICE: In severe conditions, such as immersion in water, it may be necessary to reduce the greasing service intervals.

Drive shaft slip joints

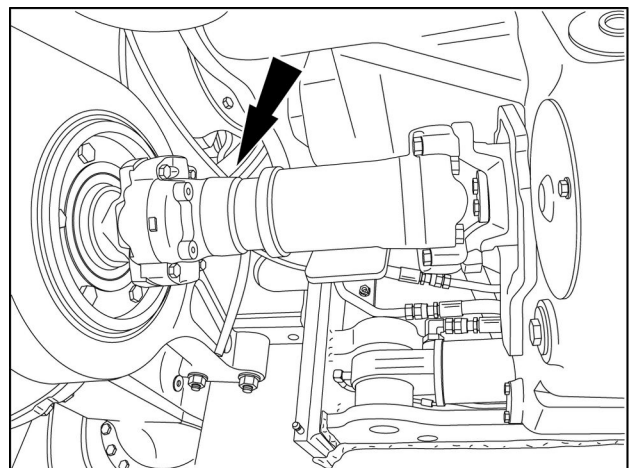
The grease zerk is located on both sides of the sliding shaft. Park the machine so the zerks are accessible.

Center Drive Shaft



RCPH11WHL235AAH 1

Rear Drive Shaft



RCPH11WHL286AAH 2

Cab air filter - Recirculation filter [60635203]

⚠ WARNING

Eye injury hazard!

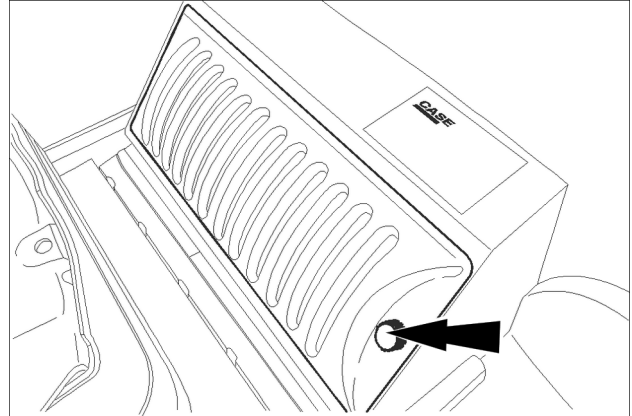
Wear full coverage safety glasses with side panels when using compressed air. Limit air pressure to 200 kPa (29 psi).

Failure to comply could result in death or serious injury.

W0162A

The cab recirculation air filter is located behind the operator's seat. Clean the cab air filters when the hour meter registers 250 hours.

1. Remove the retaining screw that holds the recirculation air filter cover in place and remove the filter.
2. Check the filter for debris or tears.
3. Clean the re-circulation filter with detergent and water or replace with a new one. Dry with compressed air.

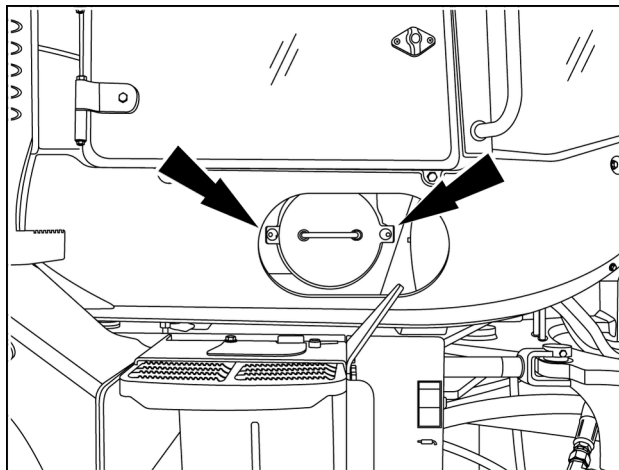


RCPH10WHL037BAL 1

4. Reinstall the filter, and secure the access filter cover.

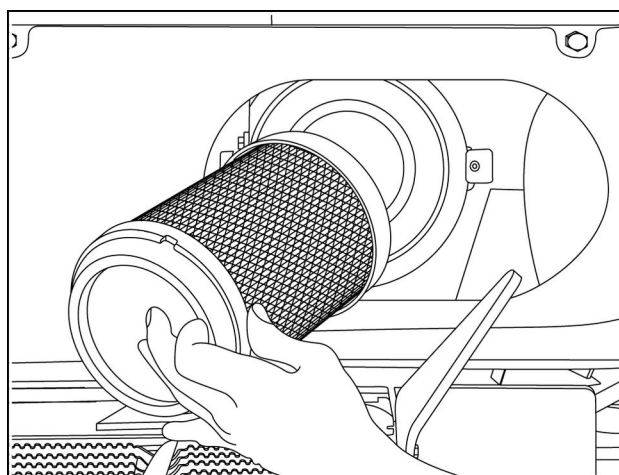
Cab air filter

1. Locate the cab filter on the right hand side of the machine, below the operator's compartment. Remove the two screws from the cab air filter cover and remove the cover. Pull the filter forward at a slight angle.



RCPH10WHL459AAH 2

2. Check the filter for debris or tears. Wipe the inside of the filter housing. Clean dust from filter, using compressed air if necessary. Reinstall the filter and air filter cover.



RCPH10WHL460AAH 3

Engine accessory drive belt [60635248]

⚠ WARNING

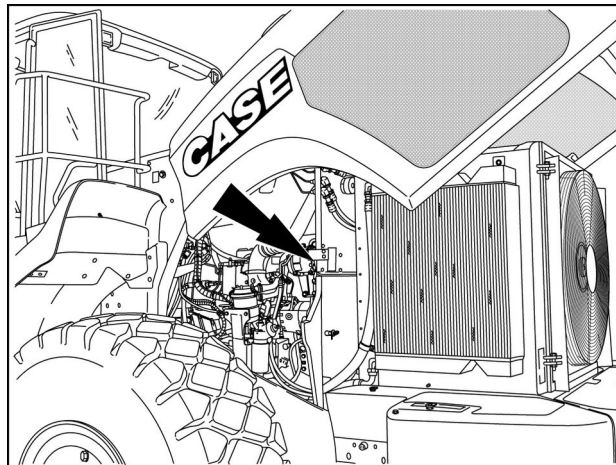
Entanglement hazard!

Always stop the engine and engage the parking brake, unless otherwise instructed in this manual, before checking and/or adjusting any drive belt or chain.

Failure to comply could result in death or serious injury.

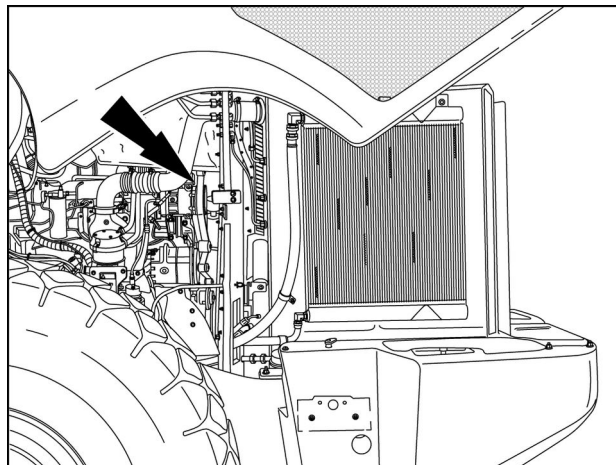
W0097A

The drive belt is located in front of the cooling box and can be accessed from the left side of the machine.



RCPH11WHL146AAH 1

Perform a visual inspection for fraying, cracks and damage. Replace belt as necessary.



RCPH11WHL128AAH 2

Wheels and tires [60635699]

⚠ WARNING

Explosion hazard!

Never weld on a wheel. Welding can cause stresses that will cause a wheel to crack or break unexpectedly. Tires can separate explosively during welding. Always have a qualified tire mechanic service wheels and tires.

Failure to comply could result in death or serious injury.

W0124A

Tire service

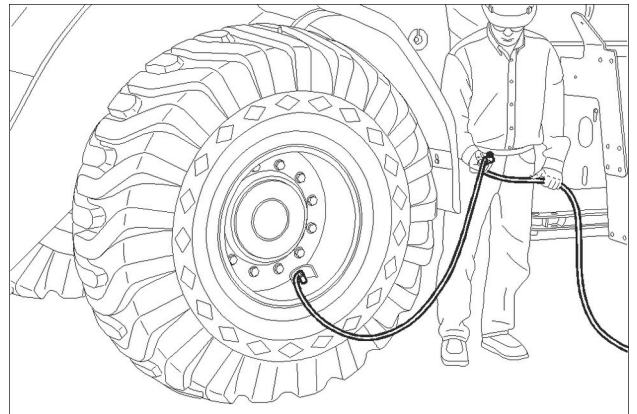
Service specifications - Normal Work Tire Inflations		
1021F Tire type	Front pressure	Rear pressure
26.5 X 25 Bias Ply	3.5 bar (50.0 psi)	2.8 bar (40.0 psi)
26.5 X 25 Radial	4.5 bar (65.0 psi)	3.2 bar (47.0 psi)

Service specifications - Normal Work Tire Inflations		
1121F Tire type	Front pressure	Rear pressure
26.5 X 25 Bias Ply	4.5 bar (65.0 psi)	3.2 bar (47.0 psi)
26.5 X 25 Radial	5.0 bar (73.0 psi)	3.5 bar (51.0 psi)

Keep all non-authorized personnel clear of the area. Park the machine on level ground, in neutral with the parking brake applied and the attachment lowered to the ground.

To add air to a tire:

1. Use an air hose with a remote shutoff valve and a self-locking air chuck. Put the tire in a restraining cage.
2. Stand **BEHIND** the tread of the tire and make sure **ALL** personnel are away from the side of the tire before you start.
3. Inflate the tire to the recommended air pressure. **DO NOT** inflate the tire more than the recommended pressure.



RCPH10WHL149BAL 1

Tire or rim service

Always have a qualified tire technician service the tires and rims for this machine. It is recommended that you have this technician inflate the tires. To prevent accidents, use a restraining device (tire inflation cage), correct equipment, and correct procedure. Explosive separation of the tire (single piece rim) or the tire and / or rim parts (multi-piece rim) can cause serious injury or death.

Tire tread direction

When the tire is installed on the wheel make sure the tire tread is in the direction shown.



RCIL10WHL260BAL 2

Every 500 hours

Engine oil and filter [60635747]

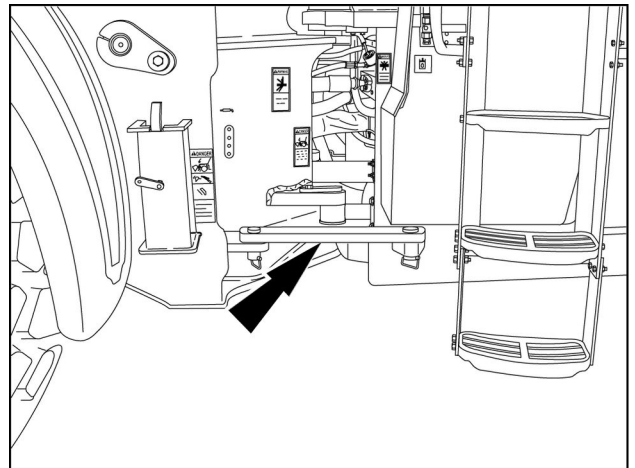
The engine oil and filter should be changed every 500 hours thereafter or more frequently when the engine operating conditions are severe.

Prior operation:

Keep all non-authorized personnel clear of the area. Park the machine on level ground, in neutral with the parking brake applied and the attachment lowered to the ground.

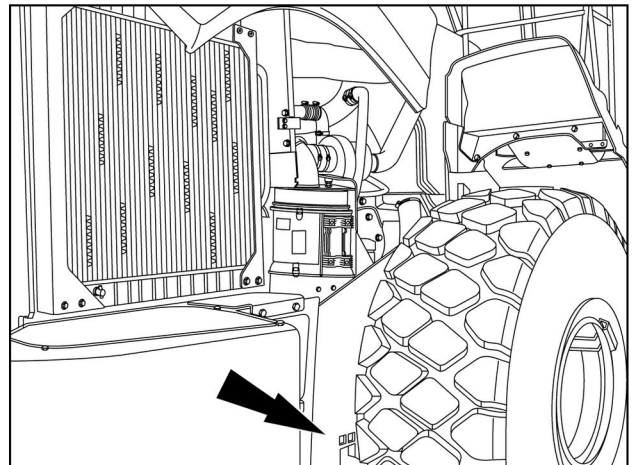
Service specifications	
Type of oil	Akcelo Unitek CJ-4 engine oil
1021F total capacity	28.5 l (30.1 US qt)
1121F total capacity	28.5 l (30.1 US qt)

1. Lower bucket/attachment to the ground and install the transport/service link into the locked position.



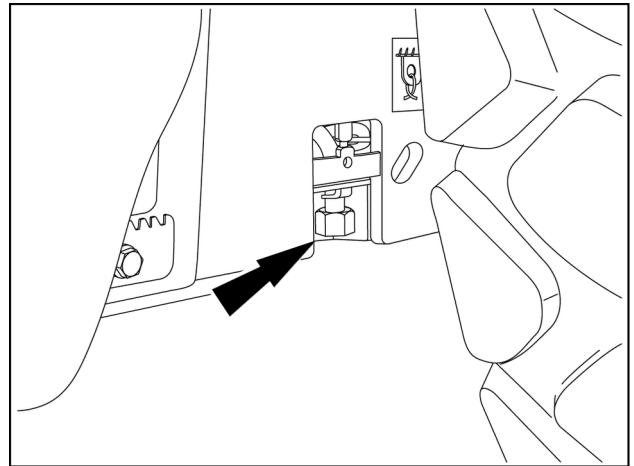
RCPH11WHL039AAH 1

2. The remote drain for engine oil is located on the lower right rear of the machine behind the tire.



RCPH11WHL105AAH 2

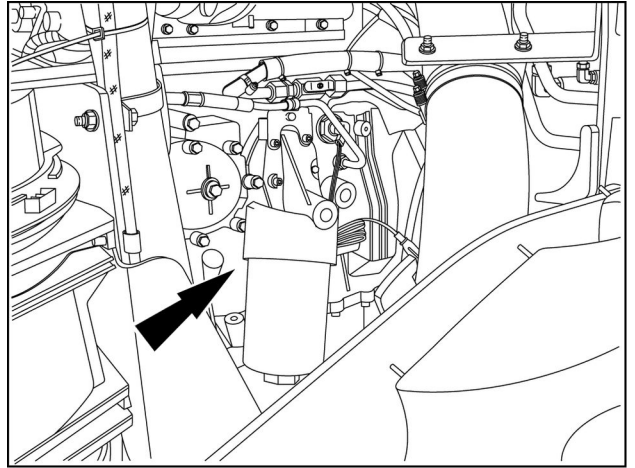
3. Attach drain hose to the remote drain plug. Use a suitable container to collect the used oil, and drain the engine completely.



RCPH11WHL104AAH 3

Replace oil filter

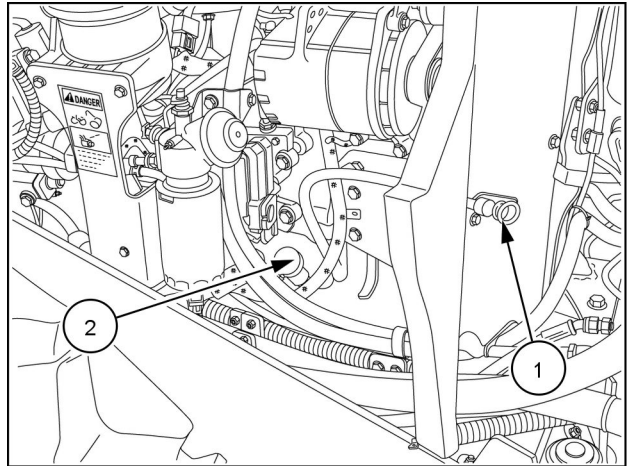
4. Raise the engine hood. Clean the area around the filter of dirt and debris.
5. Turn the filter housing counterclockwise to remove. Remove and discard the inner filter following local environmental and waste regulations.
6. Replace the filter with a new component. Replace housing gasket. Apply a thin layer of clean oil to the new gasket.



RCPH11WHL295AAH 4

NOTICE: Never use a filter wrench to install a new filter.

7. Turn the filter housing onto the base until the gasket makes contact with the base and then turn by hand an additional 3/4 turn.
8. Close the remote drain.
9. Fill the engine with the proper amount of oil through the fill port **(2)**.
10. Start the engine and run at idle speed. Check the engine oil filter and remote drain for leaks.
11. After two minutes stop the engine.
12. Wait for the engine oil to drain down for an accurate reading on the dipstick.
13. Check the dipstick **(1)** and add additional oil, if necessary.
14. Secure the engine access cover.



RCPH11WHL089AAH 5

NOTE: When changing engine oil, the oil flow rate can be improved if the oil fill cap or dipstick is removed from the engine while draining, and the oil is slightly warm.

Replace fuel prefilter [60635807]

⚠ WARNING

Fuel vapors are explosive and flammable.

Do not smoke while handling fuel. Keep fuel away from flames or sparks. Shut off engine and remove key before servicing. Always work in a well-ventilated area. Clean up spilled fuel immediately.

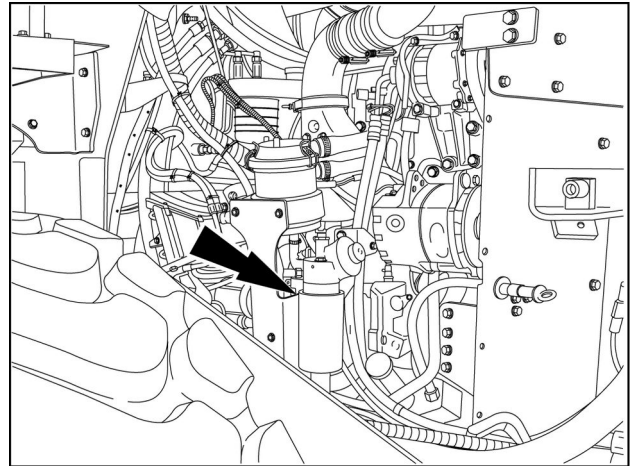
Failure to comply could result in death or serious injury.

W0904A

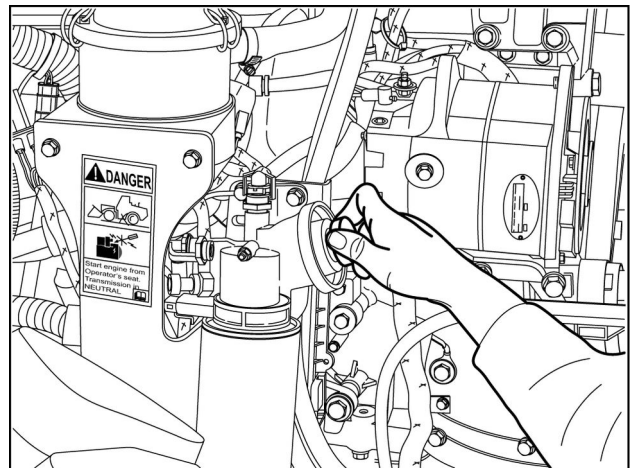
Prior operation:

Park the machine on a firm, level surface. Lower the attachment to the ground. Apply the parking brake, and install the transport service link to prevent unexpected articulation.

1. Change the fuel prefilter when the machine hour meter registers 100 hours for a new machine during the initial run-in period. Filters should be changed every 500 hours thereafter or more often if conditions so require or if fuel quality is poor. The prefilter is located on the left side of the machine.
2. Remove connector. Open the drain valve on the fuel prefilter by turning counterclockwise two or three turns.
3. Drain the water and/or contaminants from the prefilter into a suitable container until clean fuel flows. Do not allow fuel to spill on engine or ground.
4. Turn the filter counterclockwise to remove.
5. Replace with a new filter cartridge, turning clockwise until the cartridge meets the filter head. Hand tighten firmly in place. Do not use a wrench to tighten.
6. Replace connector at bottom of filter.
7. To bleed air from the system, use the pump at the top of the filter. Pump until fuel flows without air bubbles.



RCPH11WHL294AAH 1



RCPH11WHL244AAH 2

Fuel filter [60635852]

⚠ WARNING

Fire hazard!

When handling diesel fuel, observe the following precautions:

1. **Do not smoke.**
2. **Never fill the tank when the engine is running.**
3. **Wipe up spilled fuel immediately.**

Failure to comply could result in death or serious injury.

W0099A

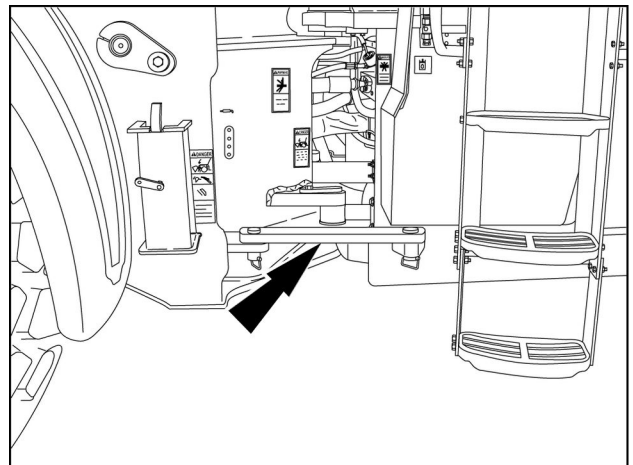
Change the fuel filter when the hour meter registers 100 hours for a new machine during the initial run-in period. Filters should be changed every 500 hours thereafter or more frequently when operating conditions are severe.

Clean the filter head area, the outside of the filter and remove any dirt and debris around the area that might contaminate the system.

Prior operation:

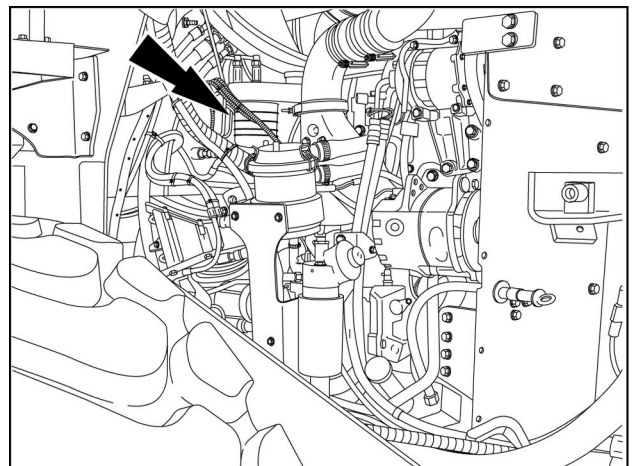
Keep all non-authorized personnel clear of the area. Park the machine on level ground, in neutral with the parking brake applied and the attachment lowered to the ground.

1. Install the transport/service link into the lock position.



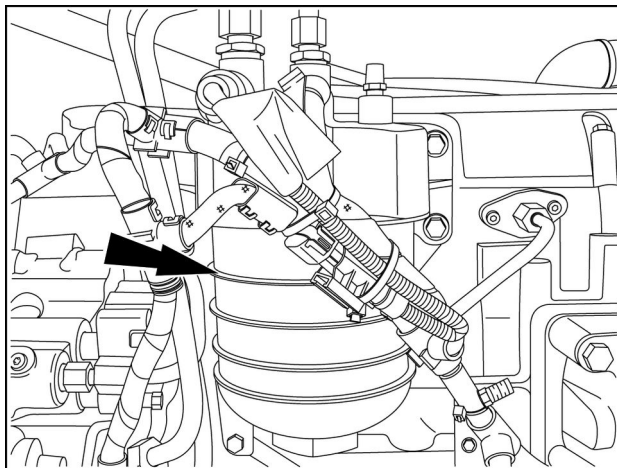
RCPH11WHL039AAH 1

2. Locate the fuel filter on the left side of machine.



RCPH11WHL294AAH 2

3. Turn the filter housing counterclockwise and remove. Remove the filter cartridge and discard. Be sure to capture any fuel remaining in the lines or the filter and discard properly.
4. Replace filter cartridge. Apply a thin layer of clean oil to the gasket.
5. Install the filter housing . Use your hands to tighten the filter 1/2 to 3/4 turn after the filter makes contact with the filter head.
6. Bleed air from system. Run the engine at low idle for a few minutes and check for leaks.



RCPH11WHL292AAH 3

Fuel tank sediment [60635902]

⚠ WARNING

Hot liquid under pressure!

Fuel in the high pressure fuel line is still under pressure immediately after you shut down the engine. Before performing any maintenance or inspection, wait for 2 minutes after engine shutdown to allow the pressure to drop.

Failure to comply could result in death or serious injury.

W0249A

⚠ WARNING

Chemical hazard!

When handling fuel, lubricants, and other service chemicals, follow the manufacturer's instructions. Wear Personal Protective Equipment (PPE) as instructed. Do not smoke or use open flame. Collect fluids in proper containers. Obey all local and environmental regulations when disposing of chemicals.

Failure to comply could result in death or serious injury.

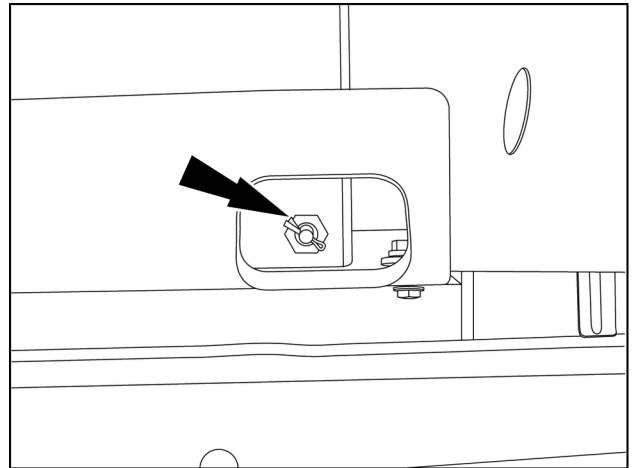
W0371A

Prior operation:

Keep all non-authorized personnel clear of the area. Park the machine on level ground, in neutral with the parking brake applied and the attachment lowered to the ground. Install the transport/service link into the lock position.

Drain condensation from the fuel tank when the hour meter registers 500 hours of operation or more frequently if conditions so require. The drain is on the lower rear of the machine.

1. Have a suitable container ready to collect the condensation and fuel. Dispose of the waste following local regulations.
2. Remove the cover to access the fuel tank drain.
3. Open the fuel tank drain slowly, remove the tank drain plug, and allow the condensation to flow until only fuel is discharged.
4. Turn the drain handle and close the drain. Replace the tank drain plug.



RCPH11WHL237AAH 1

Axle oil level [60635946]

⚠ WARNING

Chemical hazard!

When handling fuel, lubricants, and other service chemicals, follow the manufacturer's instructions. Wear Personal Protective Equipment (PPE) as instructed. Do not smoke or use open flame. Collect fluids in proper containers. Obey all local and environmental regulations when disposing of chemicals.

Failure to comply could result in death or serious injury.

W0371A

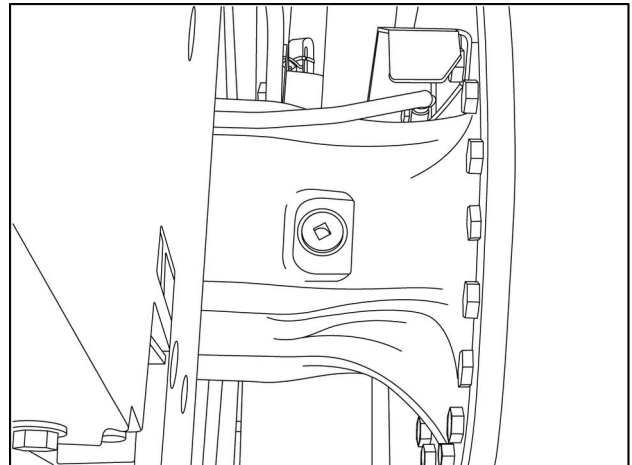
Check the oil level in the front and rear axles when the hour meter registers 500 hours.

Prior operation:

Keep all non-authorized personnel clear of the area. Park the machine on level ground, in neutral with the parking brake applied and the attachment lowered to the ground.

1021F Service specifications - Akcela NEXPLORE™ fluid	
Front axle	42.0 l (44.4 US qt)
Rear axle	42.0 l (44.4 US qt)
Front axle with axle cooler	45.7 l (48.3 US qt)
Rear axle with axle cooler	45.7 l (48.3 US qt)
Heavy duty front axle	62.0 l (65.5 US qt)
Heavy duty front axle with cooler	65.7 l (69.4 US qt)
1121F Optional Axle - Akcela NEXPLORE™ fluid	
Front axle	64.0 l (67.6 US qt)
Rear axle	64.0 l (67.6 US qt)
Front axle with axle cooler	67.7 l (71.5 US qt)
Rear axle with axle cooler	67.7 l (71.5 US qt)
Front axle with differential lock	62.0 l (65.5 US qt)
Front axle with differential lock and axle cooler	65.7 l (69.4 US qt)

1. Lower bucket/attachment to the ground and install the transport/service link into the lock position.
2. Remove the oil plug from the axle center section on the front axle. Remove the oil plug from the end of the rear axle beam. Oil level should be level with the bottom of the plug.
3. Add Case Nexplore oil if required. Clean and install the plug.



RCPH11WHL228AAH 1

Roll over protective structure [60636006]

⚠ WARNING

Roll-over hazard!

After an accident, fire, tip over, or roll over, a qualified technician *MUST* replace the Roll-Over Protective Structure (ROPS) before returning the machine to the field or job site operation.

Failure to comply could result in death or serious injury.

W0134A

⚠ WARNING

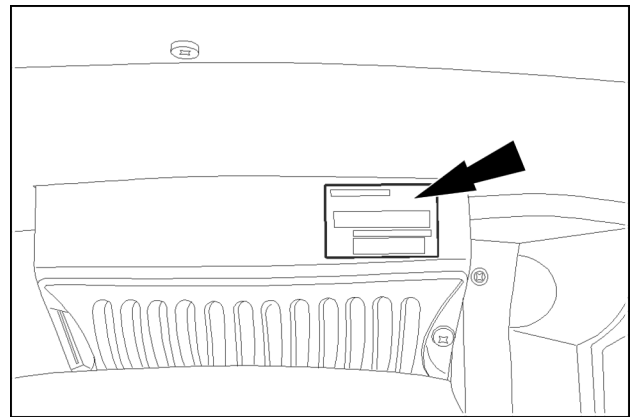
Misuse hazard!

Your machine is equipped with an operator protective structure. *DO NOT* weld, drill holes, attempt to straighten, or repair the protective structure. Modification in any way can reduce the structural integrity of the structure.

Failure to comply could result in death or serious injury.

W0001B

Your machine is equipped with an operator Protective Structure, such as: Rollover Protective Structure (ROPS) or Falling Object Protective Structure (FOPS). A ROPS may be a cab frame or a two-posted or four-posted structure used for the protection of the operator to minimize the possibility of serious injury. The mounting structure and fasteners forming the mounting connection with the machine are part of the ROPS. The Protective Structure is a special safety component of your machine. **DO NOT** attach any device to the Protective Structure for pulling purposes. **DO NOT** drill holes into the Protective Structure. The Protective Structure and interconnecting components are a certified system. Any damage, fire, corrosion or modification will weaken the structure and reduce your protection. If this occurs, the Protective Structure **MUST** be replaced so that it will provide the same protection as a new Protective Structure. Contact your dealer for Protective Structure inspection and replacement. The protective structure **MUST** be replaced. The mounting or suspension for the Protective Structure, operator seat and suspension, seat belts and mounting components and wiring within the operator's protective system **MUST** be carefully inspected for damage. All damaged parts **MUST** be replaced.



RCIL10WHL258BAL 1

ROPS decal

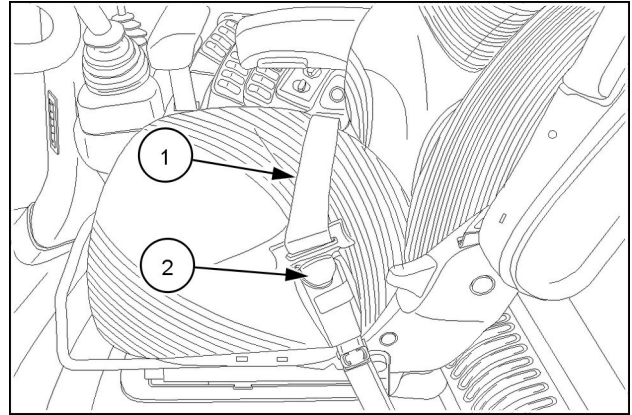
The Loader has a ROPS decal showing the certification of the ROPS, gross weight, approval, regulation, and model number of the machine.

Check and inspect the ROPS structure and the seat restraint system every 500 hours of operation.

The ROPS decal is located behind the operator's seat.

Seat belt

Before you operate this machine, always make sure the ROPS and operator's seat belt is correctly installed. The seat belt is an important part of the ROPS. You must wear the seat belt at all times when you operate the machine.



RCPH10WHL090BAL 2

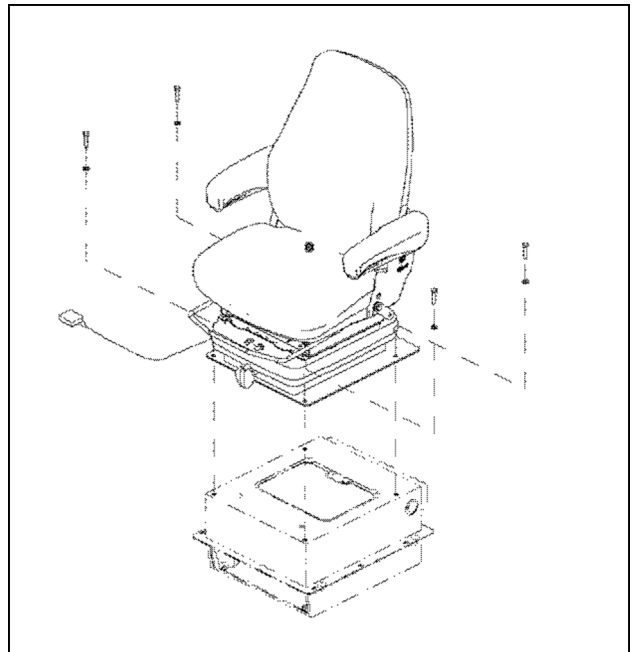
Seat and mounting hardware

Make sure all hardware that secures the seat to the cab is properly torqued. Make sure all seat belt hardware is secure and torqued.

Keep seat belts away from objects that can damage the seat belts.

Keep the seat belts clean. Wash the seat belts only in soap and water. Do not put the seat belts in bleach or dye. This will weaken the seat belt composition.

Torque seat belt hardware and seat mounting hardware to:
73 - 87 N·m (53.8 - 64.2 lb ft)



RCPH10WHL462AAH 3

ROPS cab torque specifications

⚠ WARNING

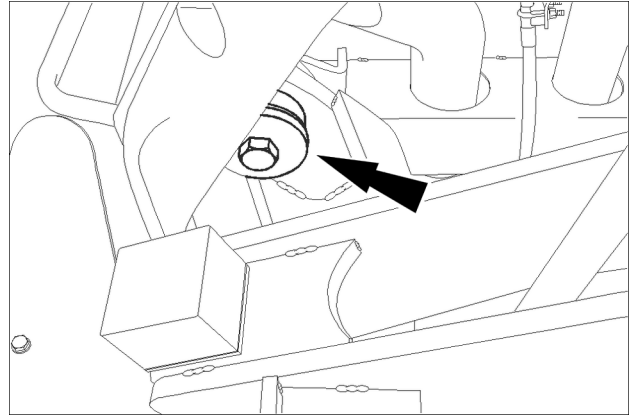
Tip-over hazard!

Adding additional weight (buckets, attachments, etc.) to the machine can create a tipping hazard. Do not exceed the gross weight indicated by the machine specifications.

Failure to comply could result in death or serious injury.

W0153A

1. Check the torque of the ROPS mounting bolts. If necessary, tighten the bolts to the correct torque.
2. Check for cracks, rust, or holes in the ROPS and ROPS components. Age, weather, and accidents can cause damage to the ROPS and ROPS parts. If you have any doubt about the integrity of the ROPS system, see your Case Dealer.



RCPH10WHL130BAL 4

Torque specifications	
ROPS cab mounting bolts (both sides)	Torque to: 773 - 854 N·m (570.1 - 629.9 lb ft)

NOTE: Torque specifications are for clean, dry threads.

Battery fluid level [60636047]

Check the fluid level of the left and right battery when the hour meter reaches 500 hours. For complete information regarding battery, fuses, etc., see electrical system in this section.

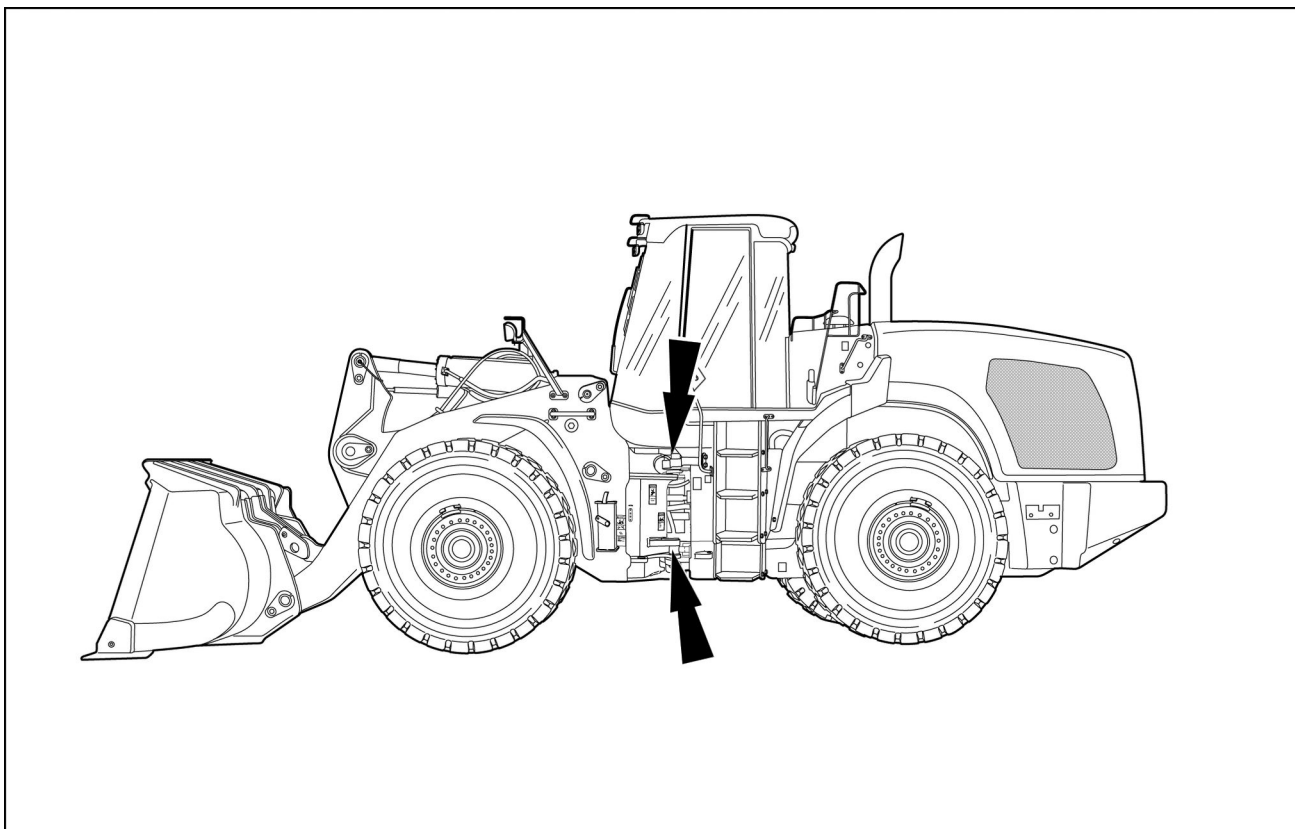
Every 1000 hours

Pivot points [60636094]

Grease the upper and lower chassis pivot points when the hour meter registers 1000 hours or sooner if conditions so require.

Prior operation:

Keep all non-authorized personnel clear of the area. Park the machine on level ground, in neutral with the parking brake applied and the attachment lowered to the ground.



RCPH11WHL010FAH 1

Articulation fittings [60636135]

⚠ WARNING

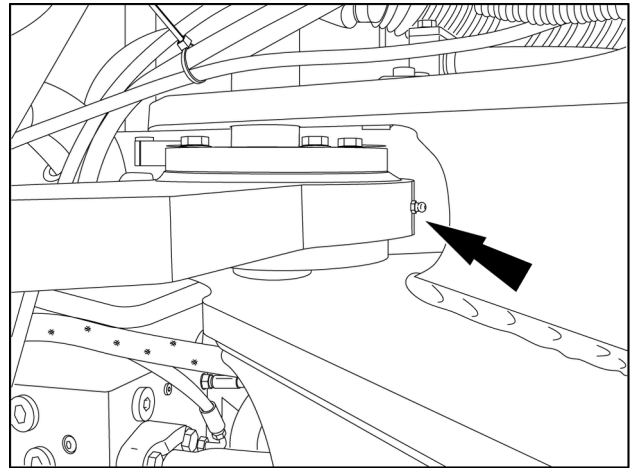
Avoid injury! Always do the following before lubricating, maintaining, or servicing the machine.

- 1. Disengage all drives.**
- 2. Engage parking brake.**
- 3. Lower all attachments to the ground, or raise and engage all safety locks.**
- 4. Shut off engine.**
- 5. Remove key from key switch.**
- 6. Switch off battery key, if installed.**
- 7. Wait for all machine movement to stop.**

Failure to comply could result in death or serious injury.

W0047A

1. Keep all non-authorized personnel clear of the area. Park the machine on level ground, in neutral with the parking brake applied and the attachment lowered to the ground.
2. Place the transport/service link into the lock position to stop unexpected articulation of the machine.
3. Clean the area around each fitting and grease.



RCPH11WHL238AAH 1

Drive belt [60636207]

⚠ WARNING

Entanglement hazard!

Always stop the engine and engage the parking brake, unless otherwise instructed in this manual, before checking and/or adjusting any drive belt or chain.

Failure to comply could result in death or serious injury.

W0097A

⚠ WARNING

Moving parts!

Install all covers, panels, and guards after servicing or cleaning the machine. Never operate the machine with covers, panels, or guards removed.

Failure to comply could result in death or serious injury.

W0135A

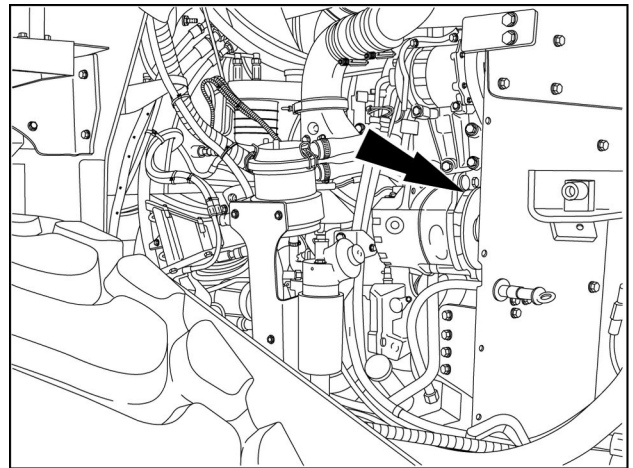
Check the belt for correct tension, wear, and damage. Wrong belt tension may cause battery charge failure, engine overheating, or belt wear.

Maintenance specifications	
Visual check	Every 10 hours or every day
Replace belts	Every 1000 hours

NOTICE: If the engine runs with the drive belt loose, the drive belt can slip and cause the engine to overheat or the battery to receive insufficient charge.

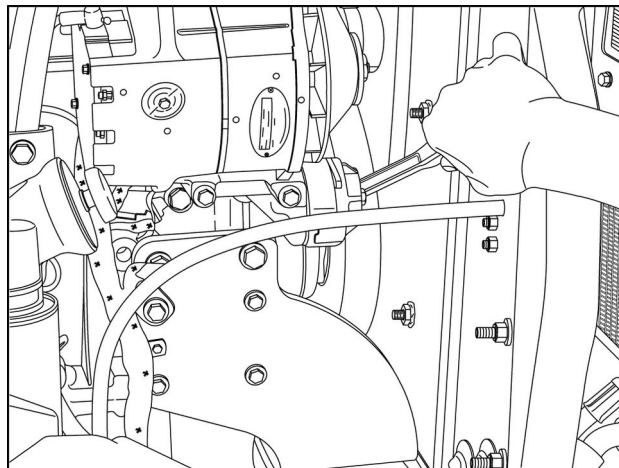
Replace drive belt

1. Replace the accessory drive belt when the hour meter registers 1000 hours. Incorrect belt tension may cause battery charge failure, engine overheating, or belt wear.
2. Locate the accessory drive belt on the left of the machine directly in front of the cooling box. The belt is checked and/or replaced from the left side of the machine.



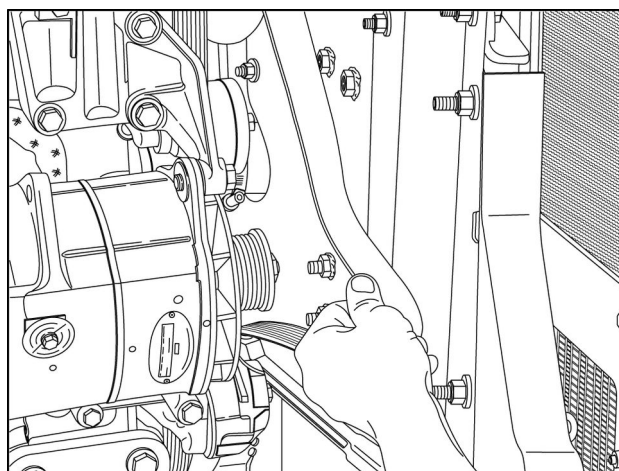
RCPH11WHL294AAH 1

3. Use a breaker bar to actuate the belt tensioner just enough to release the tension on the drive belt. Remove the belt.



RCPH11WHL248AAH 2

4. To install the new belt, fit it over the alternator, crankshaft pulleys, and complete the turn while lifting the tensioner with the breaker bar.



RCPH11WHL215AAH 3

Belt tension

The correct tension for a new belt is:

623 - 712 N·m (459.5 - 525.1 lb ft).

Tension for a used belt is:

400 - 534 N·m (295.0 - 393.9 lb ft) tension.

Cab air filter - Recirculation filter [60636293]

⚠ WARNING

Eye injury hazard!

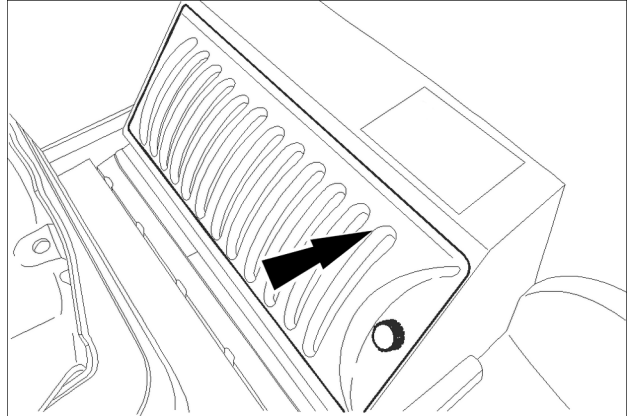
Wear full coverage safety glasses with side panels when using compressed air. Limit air pressure to 200 kPa (29 psi).

Failure to comply could result in death or serious injury.

W0162A

The cab recirculation air filter is located behind the operator's seat. Clean the cab air filters when the hour meter registers 250 hours. Replace the filter every 1000 hours or more often if conditions so require.

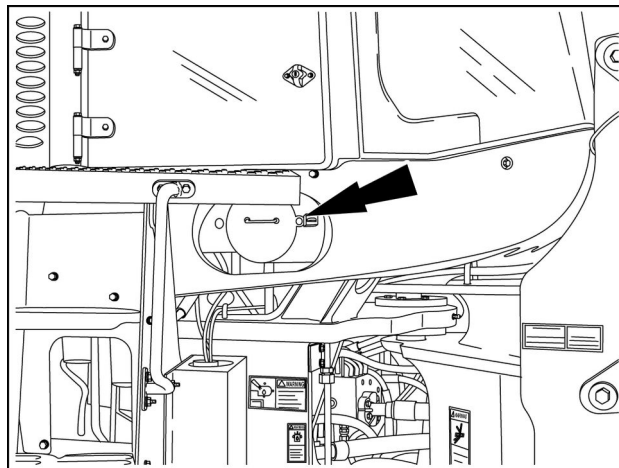
1. Remove the retaining screw that holds the recirculation air filter cover in place and remove the filter.
2. Check the filter for debris or tears.
3. Clean the recirculation filter with detergent and water or replace with a new one. Dry with compressed air.
4. Reinstall the filter, and secure the access filter cover.



RCPH10WHL905AAH 1

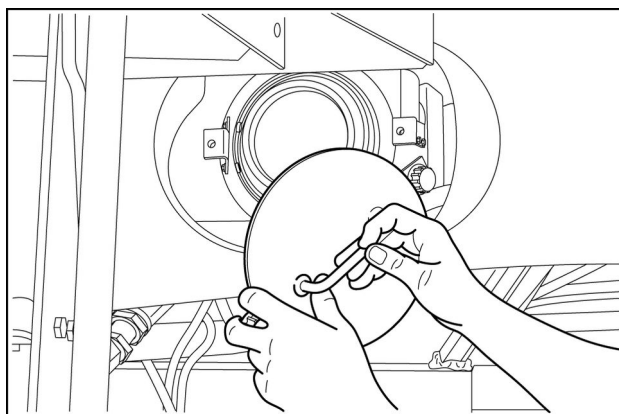
Cab air filter

The cab filter is located on the right hand side of the machine, below the operator's compartment. Clean the filter when the hour meter registers 250 hours. Replace filter every 1000 hours or more often if conditions so require.



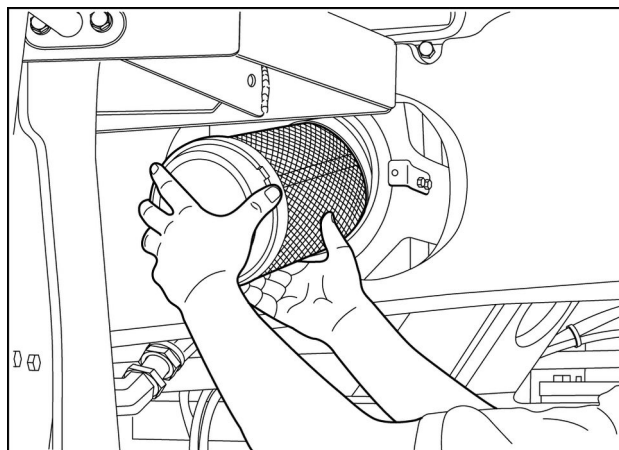
RCPH11WHL147AAH 2

1. Remove the two screws from the cab air filter cover and remove the cover. Pull the filter forward at a slight angle.



RCPH11WHL116AAH 3

2. Check the filter for debris or tears. Wipe the inside of the filter housing. Clean dust from filter, using compressed air if necessary. Reinstall the filter and air filter cover.



RCPH11WHL117AAH 4

Replacing the engine breather filter [60636334]

⚠ WARNING

Eye injury hazard!

Wear full coverage safety glasses with side panels when using compressed air. Limit air pressure to 200 kPa (29 psi).

Failure to comply could result in death or serious injury.

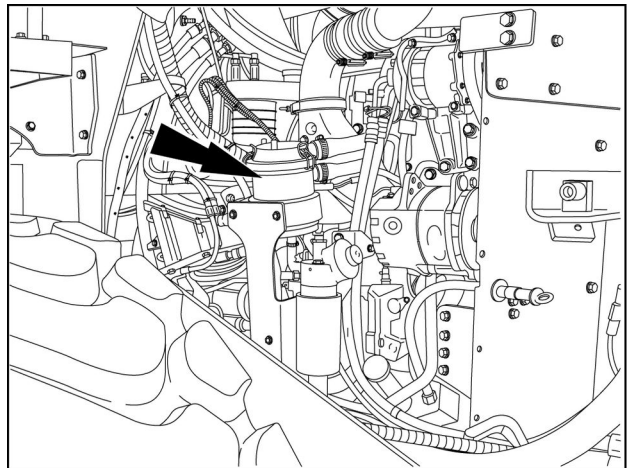
W0162A

Replace the engine breather filter when the hour meter registers 1000 hours. The filter should be changed every 1000 hours thereafter or more frequently when operating conditions are severe.

Prior operation:

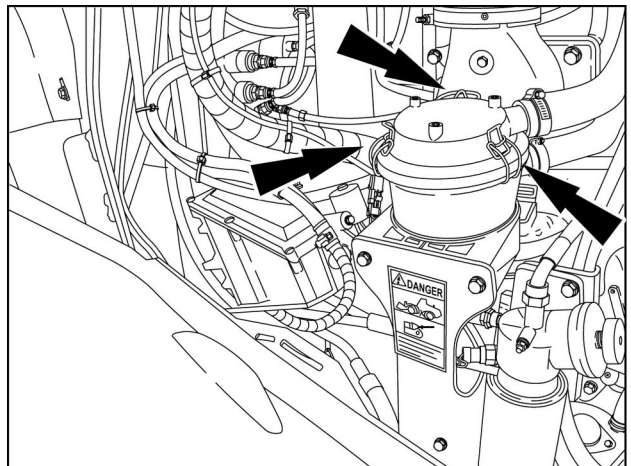
Keep all non-authorized personnel clear of the area. Park the machine on level ground in neutral with the parking brake applied and the attachment lowered to the ground. Install the safety service lock to prevent machine articulation.

1. Locate the breather on the left side of the machine.



RCPH11WHL294AAH 1

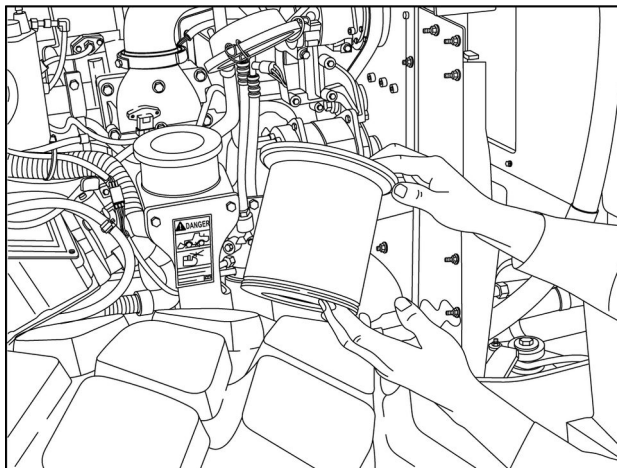
2. Release the clips securing the crankcase breather housing cover.



RCPH11WHL136AAH 2

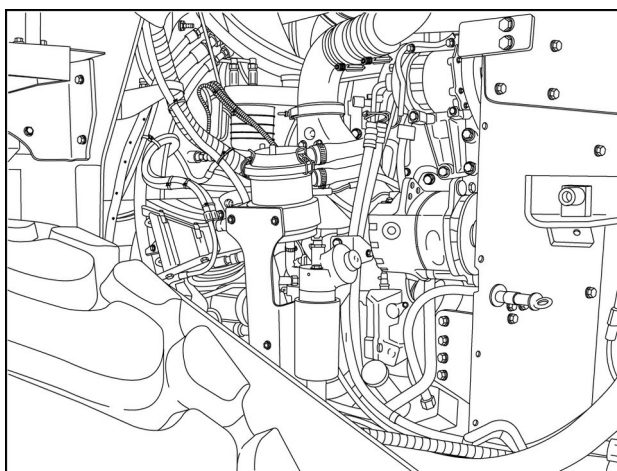
7 - MAINTENANCE

3. Remove the filter element and clean with low pressure compressed air. Wear personal protection when using compressed air.



RCPH11WHL233AAH 3

4. Replace filter, making certain filter is correctly seated. Replace housing cover and secure clips.



RCPH11WHL294AAH 4

Engine valve clearance [60636376]

Check valve adjustment

This should be performed by a qualified service technician when the hour meter registers 2000 hours. Contact your authorized dealer.

Hoses and wiring

Check all hoses and wiring for damage. If damage occurred, see your authorized dealer for repair or replacement.

Every 1500 hours

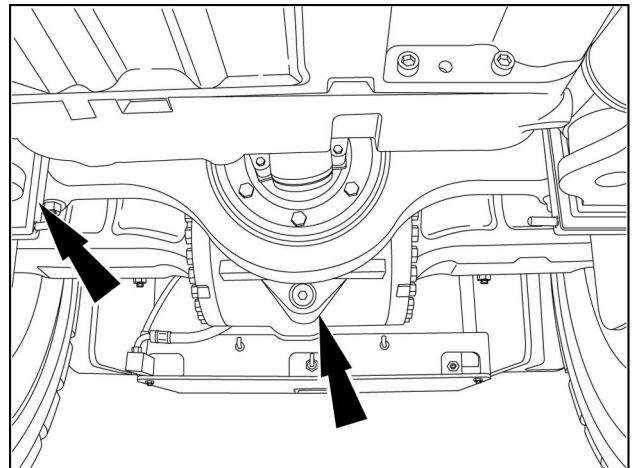
Change front and rear axle oil [60636432]

Oil Type	
Non- Akcel a NEXPLORE™ fluid (other brand)	Akcel a NEXPLORE™ fluid
Normal conditions - 1000 hours	Normal conditions - 1500 hours
Severe conditions - 500 hours	Severe conditions - 1000 hours

1021F Service specifications - Akcel a NEXPLORE™ fluid	
Front axle	42.0 l (44.4 US qt)
Rear axle	42.0 l (44.4 US qt)
Front axle with axle cooler	45.7 l (48.3 US qt)
Rear axle with axle cooler	45.7 l (48.3 US qt)
Heavy duty front axle	62.0 l (65.5 US qt)
Heavy duty front axle with cooler	65.7 l (69.4 US qt)
1121F Optional Axle - Akcel a NEXPLORE™ fluid	
Front axle	64.0 l (67.6 US qt)
Rear axle	64.0 l (67.6 US qt)
Front axle with axle cooler	67.7 l (71.5 US qt)
Rear axle with axle cooler	67.7 l (71.5 US qt)
Front axle with differential lock	62.0 l (65.5 US qt)
Front axle with differential lock and axle cooler	65.7 l (69.4 US qt)

NOTE: Do not use **GL-5** oil in these axles.

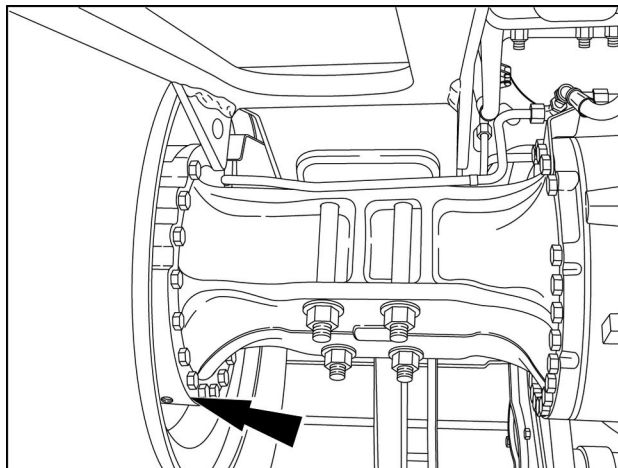
1. Install the transport/service link into the lock position to prevent unexpected articulation.
2. Clean the area around the drain and fill caps of both axles and all four axle ends.
3. Place a suitable container with sufficient capacity to capture the old oil under the front and rear axles and drain. Remove drain plug and allow oil to drain.
4. Place a suitable container with sufficient capacity to capture the old oil under each axle end. Remove drain plugs to allow oil to drain.



RCPH11WHL229AAH 1

7 - MAINTENANCE

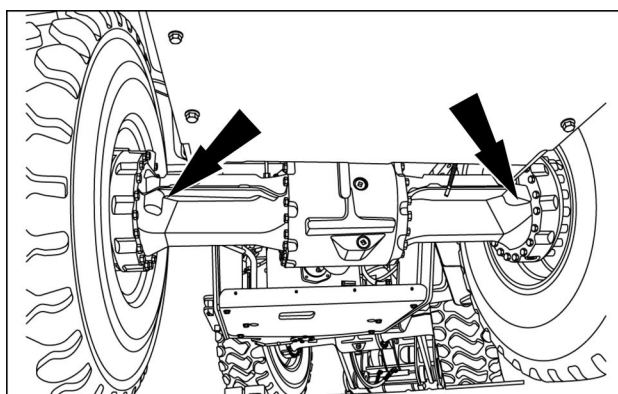
5. Reinstall drain plugs of both axles and the four axle ends. Take care not to damage the drain plug seal.



RCPH11WHL219AAH 2

6. Fill the axle with new axle oil. Oil should reach the bottom of the fill plug.
Fill the rear axle at the axle ends.
Fill the front axle from the center.

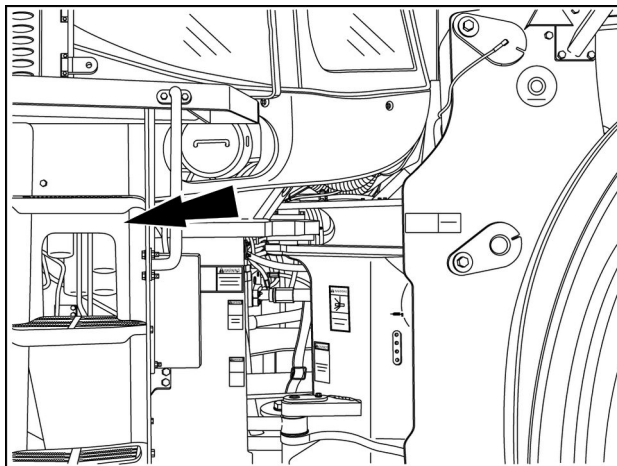
NOTE: The oil will take some time to fill each axle. Allow time for the oil to circulate throughout the axle.



RCPH10WHL081AAH 3

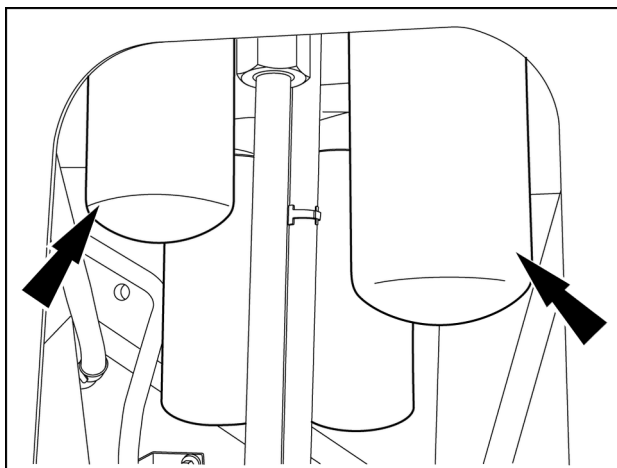
Axle cooler filters

7. Axle cooler filters are located on the right side of the machine beneath the steps. The shield can be removed for easier access if desired.



RCPH11WHL113AAH 4

8. Clean the area around the axle cooler filters. Remove filters by turning counterclockwise.
9. Apply a thin film of clean axle oil to the gasket of the new filter. Make certain proper contact is made with the base of the filter. Hand tighten then turn 1/2 to 3/4 turn more. DO NOT USE A FILTER WRENCH.



RCPH11WHL240AAH 5

Transmission fluid and filters [60636477]

⚠ WARNING

Chemical hazard!

When handling fuel, lubricants, and other service chemicals, follow the manufacturer's instructions. Wear Personal Protective Equipment (PPE) as instructed. Do not smoke or use open flame. Collect fluids in proper containers. Obey all local and environmental regulations when disposing of chemicals.

Failure to comply could result in death or serious injury.

W0371A

Change the transmission fluid and filter every 1500 hours or more frequently when operating conditions are severe. Shorten service intervals in severe applications which involve running the torque converter under high load for more than **25 %** of operation time. Applications include basement digging or land clearing. Reduce intervals as well if using low viscosity oil.

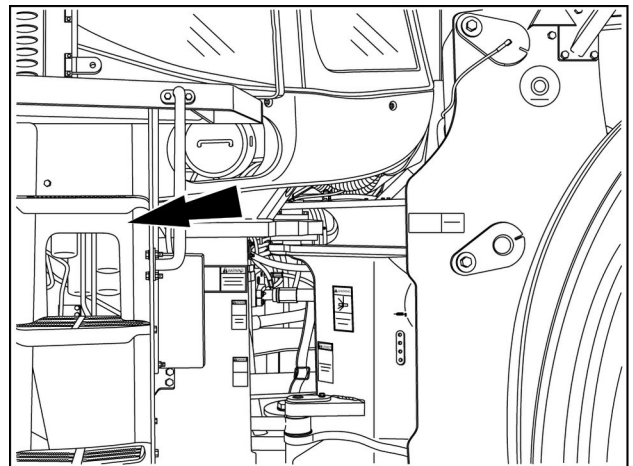
Prior operation:

Keep all non-authorized personnel clear of the area. Park the machine on level ground, in neutral with the parking brake applied and the attachment lowered to the ground.

Oil Type	
Non- Akcel a NEXPLORE™ fluid (other brands)	Akcel a NEXPLORE™ fluid
Normal conditions - 1000	Normal conditions - 1500
Severe conditions - 500	Severe conditions - 1000

1021F Specifications (with filter change)	45.4 l (12.0 US gal)
1121F Specifications (with filter change)	45.4 l (12.0 US gal)

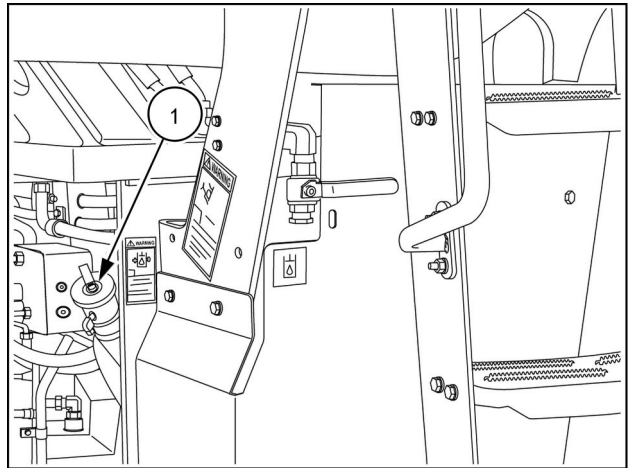
1. Lower bucket/attachment to the ground and lock the pilot control lock lever.
2. Put the transport/service link into the locked service position to avoid unexpected articulation, and stop the engine.
3. Remove panel for easier access to transmission filters, if desired.



RCPH11WHL113AAH 1

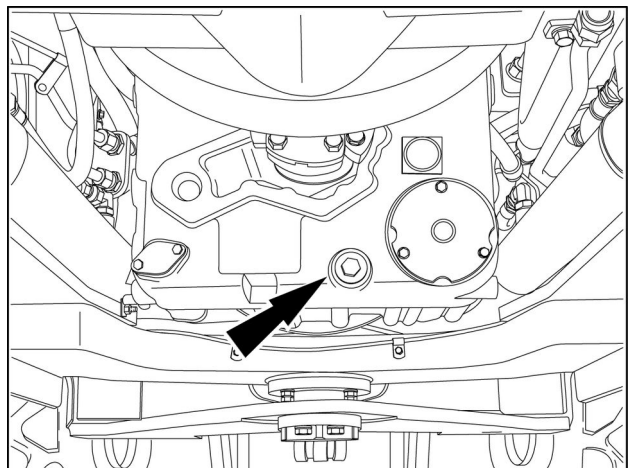
7 - MAINTENANCE

4. Remove the fill cap (1). Open drain. This will allow oil to drain more freely.



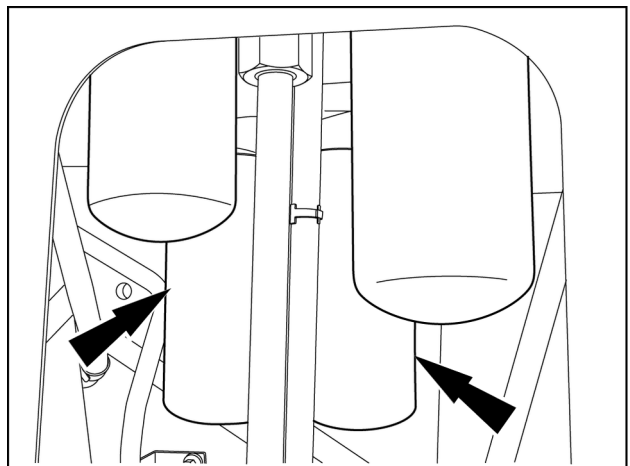
RCPH11WHL125AAH 2

5. Clean the area around the drain plug (2) on the transmission. Open oil drain plug and drain oil into suitable container.



RCPH11WHL282AAH 3

6. Clean area around transmission filters. Remove filters by turning counterclockwise. Remove the filter.
7. To replace transmission filters, apply a film of clean transmission oil to the gasket of the new filter and install. Make sure that the proper contact is made with the base. Tighten 1/2 turn more once firm contact is made.



RCPH11WHL240AAH 4

Clean transmission breather vent

8. Clean the breather. The breather is located on top of the transmission. Spin the breather a few times. Clean the filter, if equipped.
9. If the breather is difficult to spin follow steps 11 and 12.
10. Remove the breather. Clean it with solvent and dry with compressed air.
11. Install the breather.
12. Fill the transmission with proper amount of fluid at fill port **(1)**.
13. Check the oil level at the sight gauge.
14. Start the engine and check for oil leaks around the filter and drain plug.
15. Bring the transmission oil up to working temperature, and check the level again.

ATTENTION: Check fluid and filters for contaminants or metal shavings or particles that could damage machine components.

Calibrating the gear box [60636529]

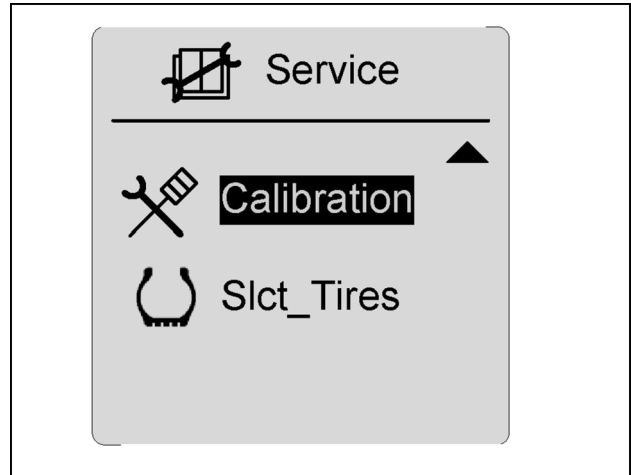
Calibrate the gear box when the hour meter registers 250 hours for a new machine. Calibration of the gear box should be performed every 1500 hours thereafter.

Prior operation:

Run the machine and warm the oil to about **85 °C (185.0 °F)**. Keep all non-authorized personnel clear of the area. Park the machine on a firm, level surface.

1. Place the transmission control lever in NEUTRAL.
2. Set the parking brake.
3. With the engine running at idle, enter the service screen menu and scroll to Config screen. Press the confirm key.

Use down arrow button to scroll to Calibration. Highlight Calibration and press the confirm key. Always follow the prompts on the screen. Should an error occur, use the escape key to start over again.



RCPH10WHL376BAH 1

The screen will show a confirm prompt. If you doubt your ability to perform this operation, press the escape key and call your dealer.

If machine conditions are incorrect, an error message will appear. The calibration procedure will not complete. Follow the prompts to aid in correcting any machine conditions.

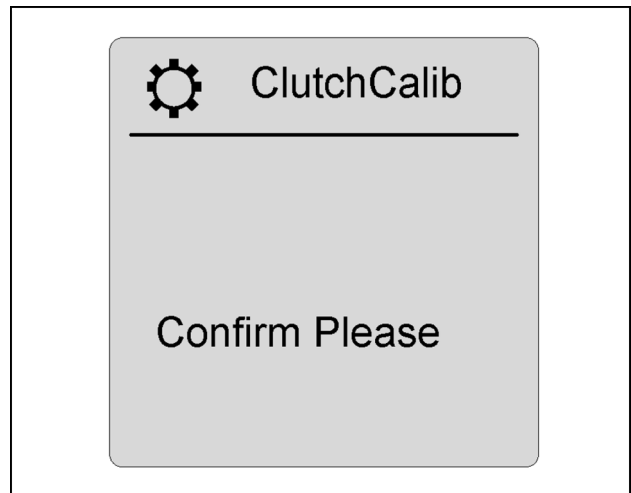
The screen may display the following prompts to guide the user to correct machine conditions:

- Not in neutral
- Parking brake OFF
- Machine moving
- Oil temp too low
- Oil temp too high
- Engine RPM low
- Engine RPM high

If conditions are correct, the user will see six calibration screens displayed. They will appear in the following order:

- Adjust K1
- Adjust K2
- Adjust K3
- Adjust K4
- Adjust KV
- Adjust KR

Once the calibration process is complete, the user will be prompted to turn the engine Off and restart the machine. If the process is not completed, the screen will prompt the user to escape.



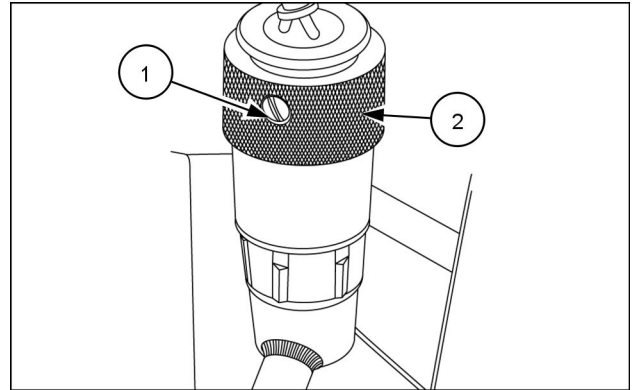
RCPH10WHL378BAH 2

Transmission declutch pressure adjustment [60636572]

Prior operation:

Keep all non-authorized personnel clear of the area. Park the machine on firm, level ground. Lower the arms until bucket edge is on the ground. Apply the parking brake, and stop the engine.

1. Loosen the set screw **(1)** located near the end of the adjustable transmission declutch pressure switch.
2. Rotate the outer body **(2)** of the adjustable transmission declutch pressure switch in either the clockwise or counter clockwise direction. Turning the outer body clockwise will increase the amount of brake pressure required to activate the declutch function. Turning the outer body counter clockwise will decrease the amount of brake pressure required to activate the declutch function. Adjust the adjustable transmission declutch pressure switch according to operator preference.
3. The adjustable declutch pressure switch is set to **10.34 bar (149.9 psi)** plus or minus **0.55 bar (8.0 psi)** from the factory. For every 1/4 turn of the outer body there is a **1.03 bar (14.9 psi)** pressure change in the switch. The pressure change is the same in either the clockwise or counter clockwise direction.
4. Tighten the set screw **(1)** located near the end of the adjustable transmission declutch pressure switch. Test the adjusted declutch function for desired effect in a clear open area away from obstacles. Readjust as desired.
5. The transmission declutch is activated by brake pressure. A higher brake pressure to activate the declutch function is desirable when operating on inclines. Higher brake pressure is the result of increasing brake pedal travel. A lower brake pressure to activate the declutch function is desirable when operating on firm, flat terrain. Lower brake pressure is the result of limited brake pedal travel.



RCIL10WHL270BAL 1

Every 2000 hours

Hydraulic oil and filter [60636640]

⚠ WARNING

Pressurized hydraulic fluid can penetrate the skin and cause severe injuries. Hydraulic fluid is under extreme pressure. Rest the bucket or attachment on the ground. Shut the engine off, turn the key on, and move the hydraulic control lever through all movements several times to relieve residual pressure in the system. Failure to comply could result in death or serious injury.

W0161A

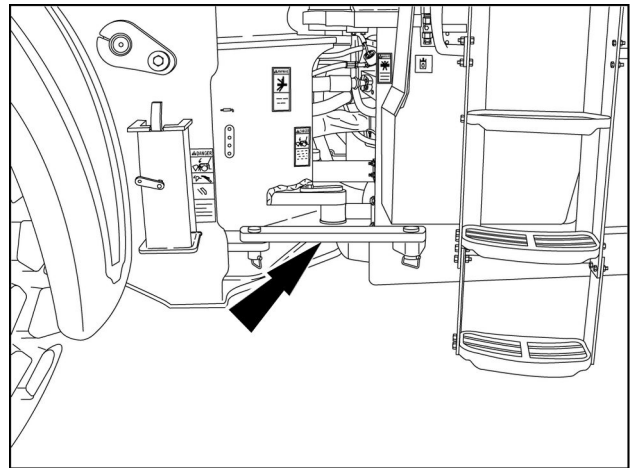
Change the hydraulic oil every 2000 hours of operation. Change hydraulic oil more frequently when operating conditions are severe.

Prior operation:

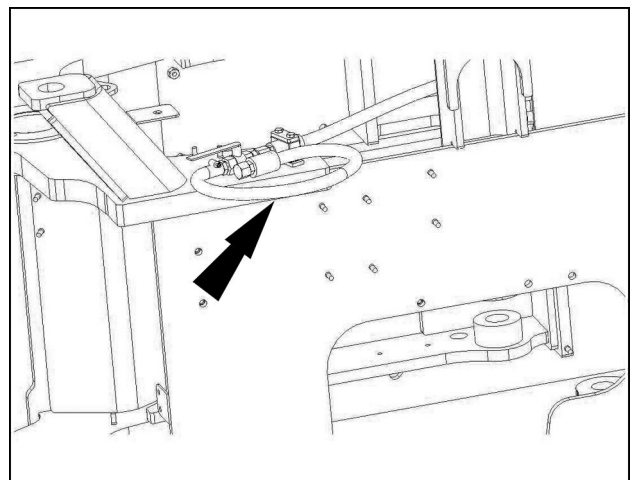
Keep all non-authorized personnel clear of the area. Park the machine on a firm, level surface, lower bucket/attachment to the ground and apply the parking brake.

Service specifications	
Type	Akcela Hydraulic excavator fluid
1021F Total system capacity	250 l (66 US gal)
1121F Total system capacity	250 l (66 US gal)

1. Stop the engine. Put a Do Not Operate tag on the steering wheel or key switch.
2. Place the transport/service link into the lock position to prevent unexpected articulation.
3. Make sure the accumulators are completely discharged by pushing down on the brake pedal a minimum of 30 times.
4. Release pressure in ride control accumulators, if equipped. To release ride control accumulators, access bleed screw in ride control valve. Bleed pressure from accumulators.
5. With the ignition key in the ON position, cycle the bucket/attachment control levers repeatedly through their complete range of motion for at least **30 s**.
6. Move the hydraulic controller to the float position and turn the key off.
7. Open the hydraulic reservoir drain and using the provided drain hose, drain the hydraulic oil into a suitable container.

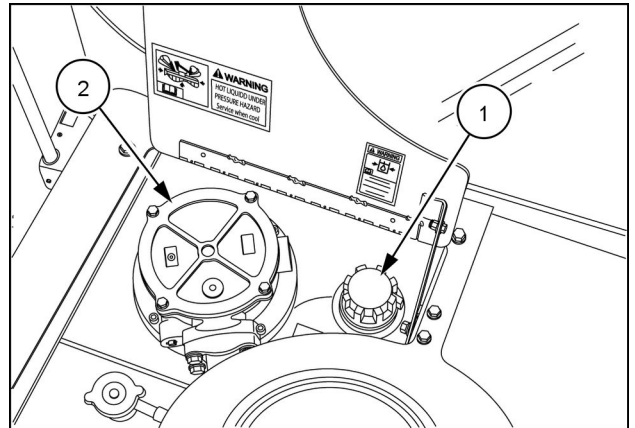


RCPH11WHL039AAH 1



RCPH11WHL263AAH 2

8. Clean the area around the fill cap **(1)** and reservoir cover **(2)**. Slowly remove the cap.



RCPH11WHL264AAH 3

Changing hydraulic oil filter

⚠ CAUTION

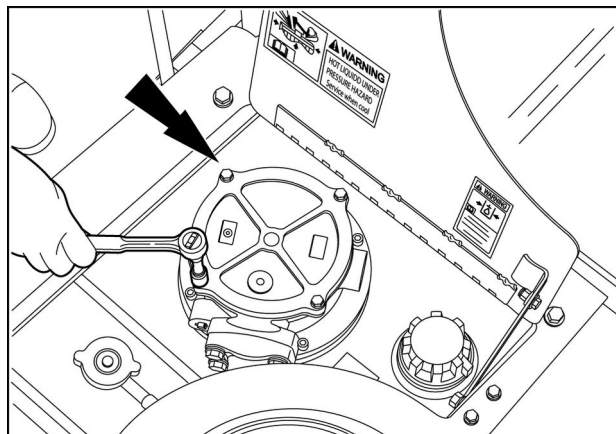
Spring under tension!

In the following steps, the high tension spring must be carefully unloaded. Maintain hands-on control of the breaker bar for the entire procedure. Wear eye protection.

Failure to comply could result in minor or moderate injury.

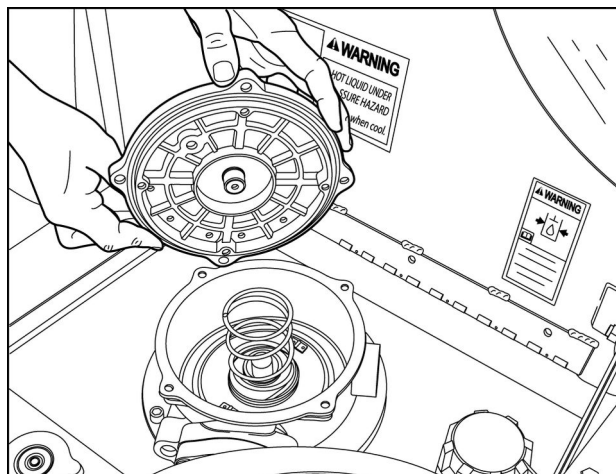
C0072A

9. Remove and replace the hydraulic oil filter when replacing hydraulic oil. The filter is located under the reservoir cover (2). Remove screws from cover.



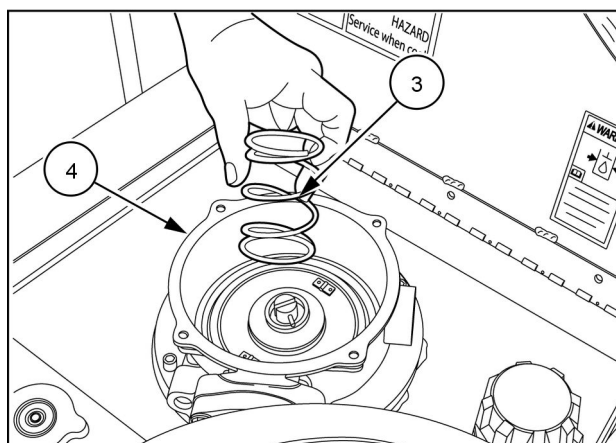
RCPH11WHL265AAH 4

10. Use care as cover is spring loaded. Remove spring and O-ring.



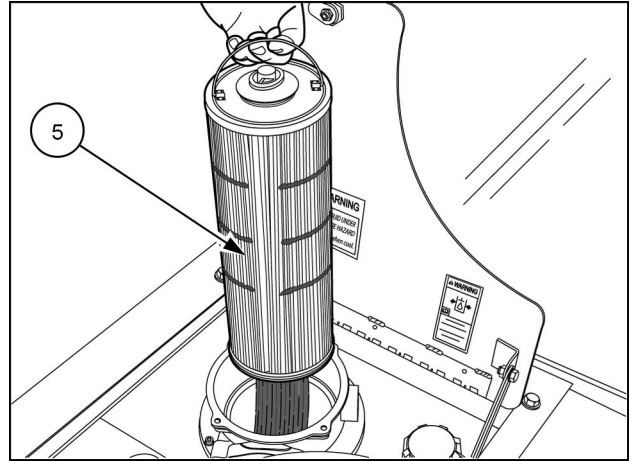
RCPH11WHL266AAH 5

11. Remove spring (3) and O-ring (4).



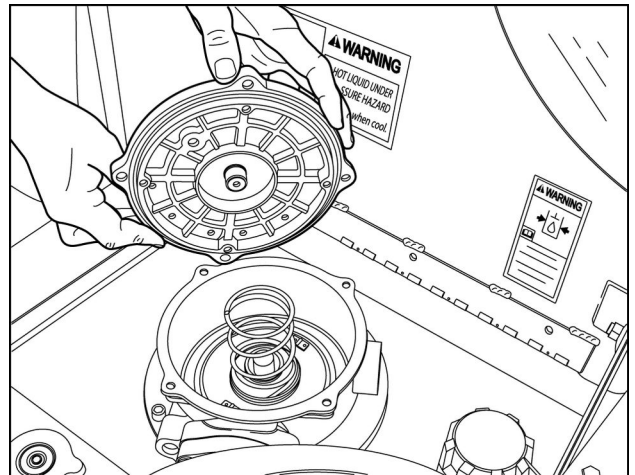
RCPH11WHL267AAH 6

12. Remove filter **(5)** and replace with new filter. Make sure grommet is removed with the filter.



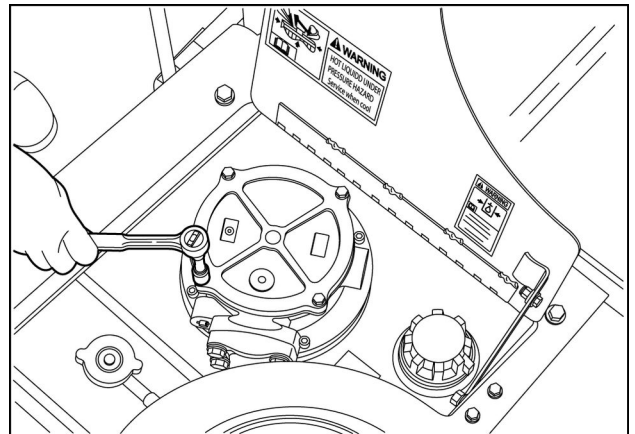
RCPH11WHL268AAH 7

13. Replace O-ring with new O-ring, reinstall spring, and put cover in place.



RCPH11WHL268AAH 8

14. Replace screws, tightening alternately.
15. Close drain. Refill reservoir with correct fluid and correct capacity. Install the reservoir fill cap.
16. Start the engine and run at **1000 RPM**. Check for leakage around the drain.
17. Operate the loader controls several times to remove any air in the lines.
18. Place the loader bucket/attachment on the ground and stop the engine. Check the hydraulic oil level.
19. If it is necessary to top off with more oil, remove the fill cap slowly to release pressure in the reservoir and add required oil.



RCPH11WHL265AAH 9

Engine coolant [60636683]

⚠ WARNING

Burn hazard!

Hot coolant can spray and scald if you remove the radiator or deaeration tank cap while the system is hot. To remove the cap: allow the system to cool, turn the cap to the first notch, and wait for all pressure to release. Remove the cap only after all pressure has released.

Failure to comply could result in death or serious injury.

W0367A

⚠ WARNING

Rotating parts!

The engine is running. Keep clear of rotating fans and belts.

Failure to comply could result in death or serious injury.

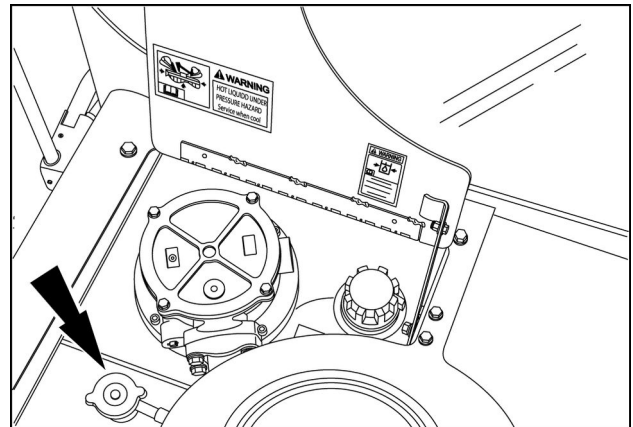
W0275A

Drain, flush and replace the engine coolant every 2000 hours of operation or each year, whichever occurs first. Clean the system and replace the coolant if it becomes dirty or is rust colored.

Service specifications

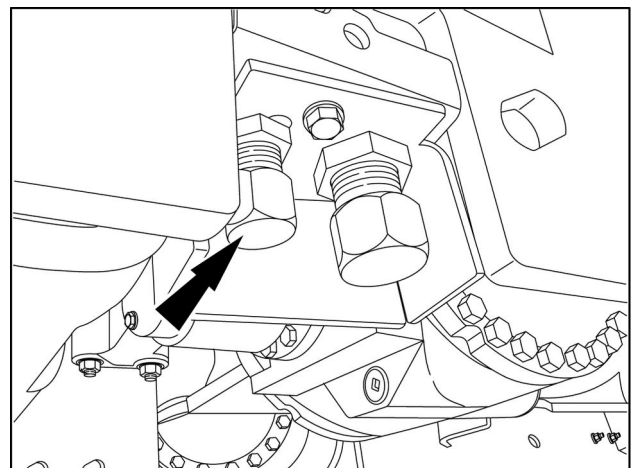
1021F Capacity	56.8 l (15.0 US gal)
1121F Capacity	56.8 l (15.0 US gal)

1. After the engine has cooled and the temperature of the coolant has reached a safe level, remove the cap.



RCPH11WHL264AAH 1

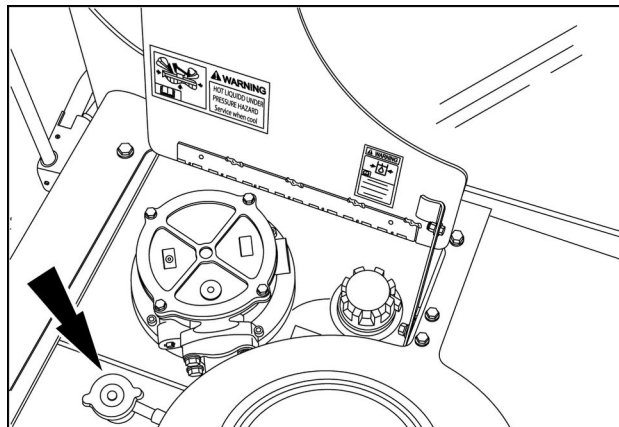
2. With a suitable container of the proper capacity under the drain, open the cap by turning counterclockwise and drain the coolant from the system.
3. After all the coolant is drained, secure the drain cap.
4. Use a system cleaning product to clean and flush the system. Contact your Dealer for system cleaning products.
5. After the system has been cleaned and flushed following the cleaning product instructions, close and secure the drain valve.



RCPH11WHL225AAH 2

7 - MAINTENANCE

6. Fill with the proper mix of antifreeze/coolant and water for the system and for the prevailing weather conditions.
7. Start the engine, and let it run at low idle until the engine reaches operating temperature. Recheck the level of the system.



RCPH11WHL264AAH 3

ATTENTION: This is a deaeration system and does not have an overflow. Do not overfill. Do not fill to the top of the tank . Check the sight gauge on the left side of the machine after refill.

Engine air filters [60636729]

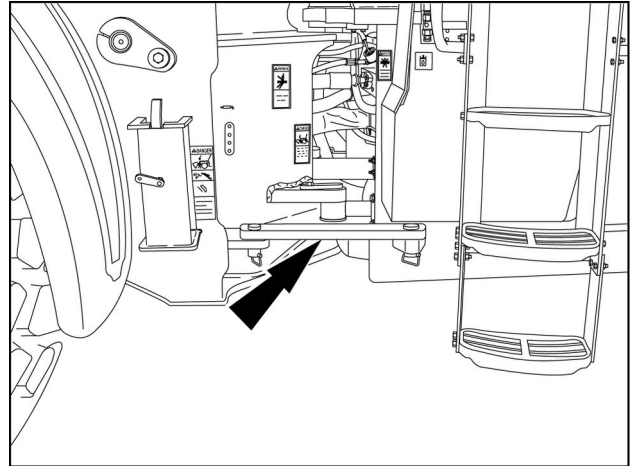
The air filter should be checked periodically for dirt and debris build up. Replace the engine primary and secondary air filter every 2000 hours or each year, whichever occurs first.

Prior operation:

Keep all non-authorized personnel clear of the area. Park the machine on level ground, in neutral with the parking brake applied and the attachment lowered to the ground.

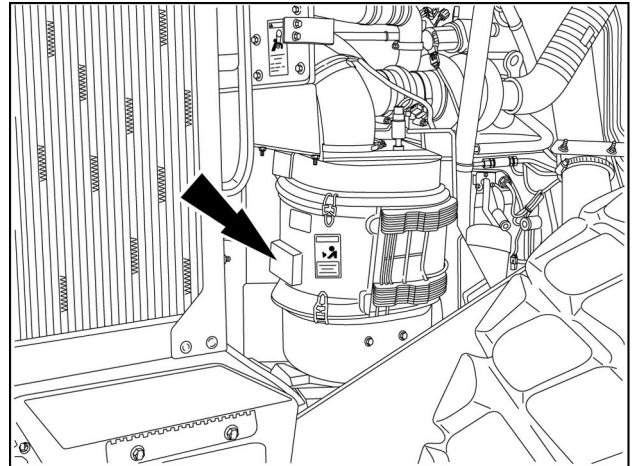
NOTE: Replace the primary element if the filter warning lamp on the instrument cluster illuminates or the audible alarm sounds. Should the caution warnings continue after replacing the primary filter, replace the secondary filter as well.

1. Lower bucket/attachment to the ground and install the transport/service link into the lock position.



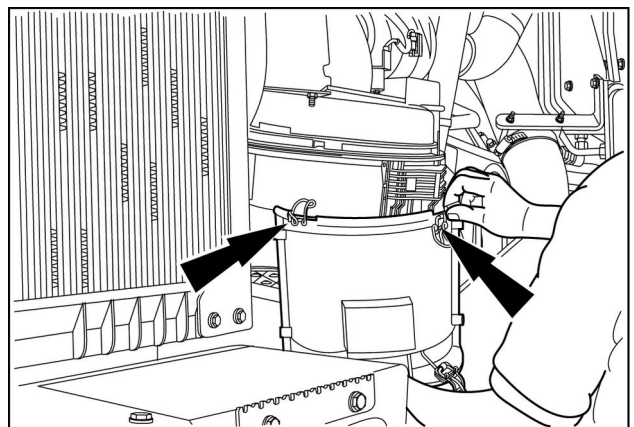
RCPH11WHL039AAH 1

2. Access the engine air filters by raising the hood. Locate the engine air filter on the right hand side of the machine.



RCPH11WHL077AAH 2

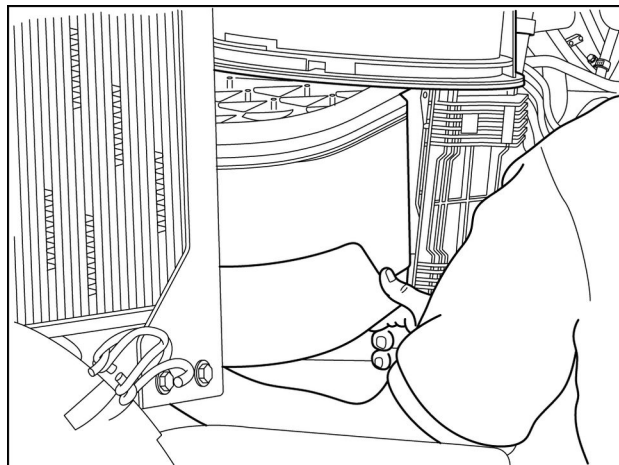
3. Release the clips that secure the filter cover.
4. Remove the cover.
5. Remove the primary filter using the handle to pull the element straight out.



RCPH11WHL106AAH 3

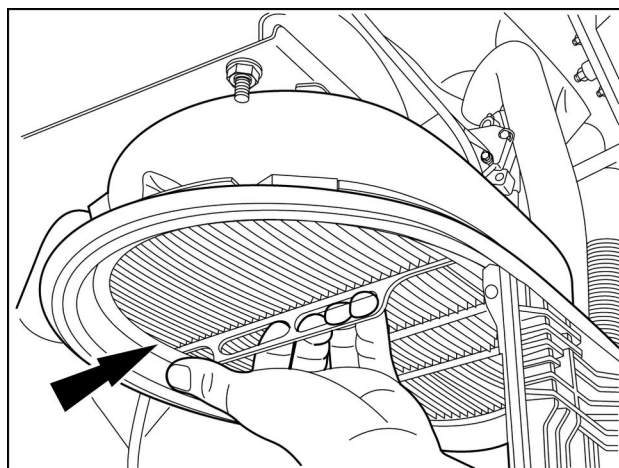
7 - MAINTENANCE

6. After the primary filter has been removed, wipe the inside of the filter housing body clean of any dirt and debris prior to removing the secondary filter.



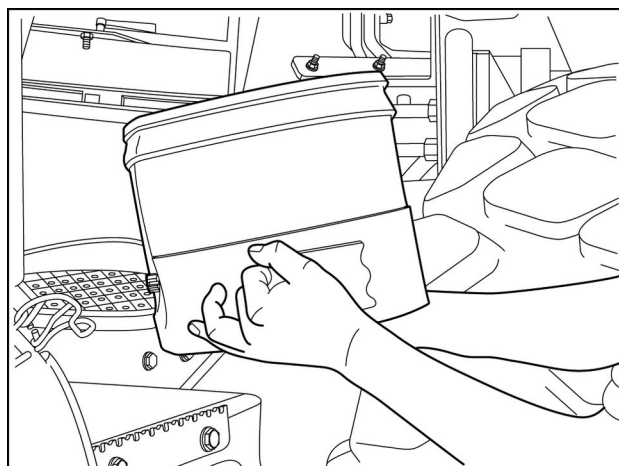
RCPH11WHL107AAH 4

7. Remove the secondary filter from the top of the housing. Use the handle and pull down and out.
8. Wipe the inside of housing. Install the new secondary filter. **DO NOT REUSE THE SECONDARY FILTER.**
9. Insert the filter into the positioning slot. Make certain to firmly seat the secondary filter into the inlet housing.



RCPH11WHL109AAH 5

10. Install the new primary filter by sliding filter into housing. Be sure filter element tabs are positioned inside the grooves located on the housing. Push element up and into place within housing. Make sure primary and secondary filter elements are fully seated and form an effective seal.

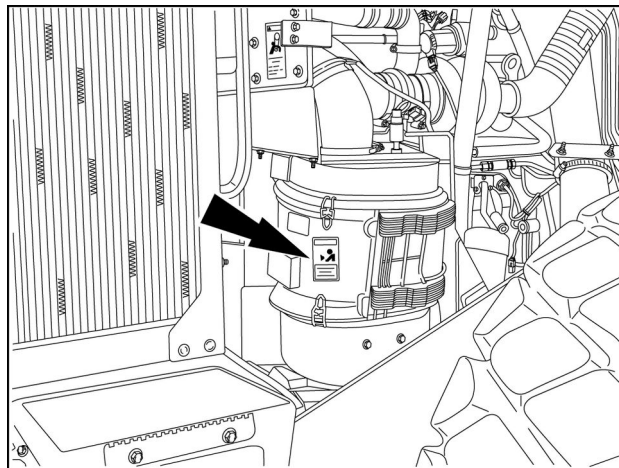


RCPH11WHL108AAH 6

11. Install the cover and lock the clips to secure the cover in place. If the cover does not secure in place properly, recheck filter installation. The cover will be difficult to install if filters are not properly installed.

12. Close the engine hood.

NOTE: Under normal conditions, the secondary filter should be replaced after three primary filter replacements. Never clean the secondary filter. It must be replaced. Replace filters more often if conditions so warrant.



RCPH11WHL077AAH 7

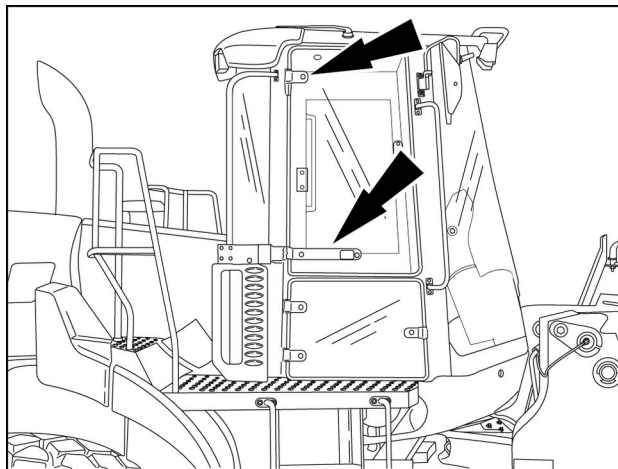
Frame and cab - lubricate [60636776]

Prior operation:

Keep all non-authorized personnel clear of the area. Park the machine on a firm, level surface, lower bucket/attachment to the ground and apply the parking brake.

Lubricate door and window hinges

1. Lubricate door and window hinges on the left and right side of the cab when the hour meter registers 2000 hours or more frequently if conditions so require.
2. Use graphite to lubricate hinges. Do not use grease.



RCPH11WHL072AAH 1

As required

Fuel pre-filter [60636847]

⚠ WARNING

Fuel vapors are explosive and flammable.

Do not smoke while handling fuel. Keep fuel away from flames or sparks. Shut off engine and remove key before servicing. Always work in a well-ventilated area. Clean up spilled fuel immediately.

Failure to comply could result in death or serious injury.

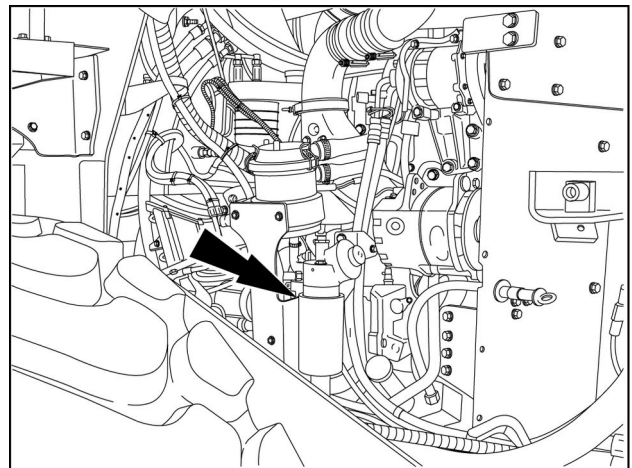
W0904A

Prior operation:

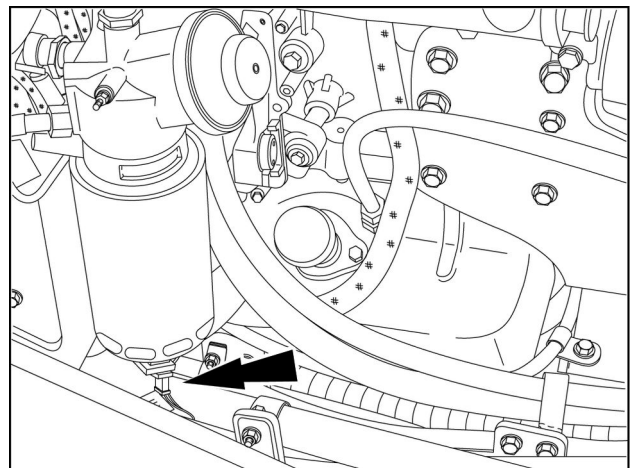
Park the machine on a firm, level surface. Lower the attachment to the ground. apply the parking brake, and install the transport service link to prevent unexpected articulation.

Drain fuel prefilter condensation

1. Drain water and sediment from the fuel prefilter as required. In certain geographic regions and climates it may be necessary to drain condensation more frequently.
2. Remove connector. Open the drain valve on the fuel prefilter by turning counterclockwise two or three turns.
3. Drain the water and/or contaminants from the prefilter into a suitable container until clean fuel flows. Do not allow fuel to spill on engine or ground.
4. When clean fuel runs through the prefilter, close drain valve. Replace connectors. Dispose of contaminated fuel following local environmental codes and guidelines.



RCPH11WHL294AAH 1



RCPH11WHL088AAH 2

NOTE: If it is necessary to bleed the fuel system, use the attached pump at the top of the prefilter housing.

Air conditioning condenser [60636893]

⚠ WARNING

Explosion hazard!

Air-conditioning refrigerant boils at -12 °C (10 °F)!

-NEVER expose any part of the air-conditioning system to a direct flame or excessive heat.

-NEVER disconnect or disassemble any part of the air-conditioning system.

Discharging refrigerant gas into the atmosphere is illegal in many countries.

Failure to comply could result in death or serious injury.

W0340A

⚠ WARNING

Escaping refrigerant may cause frostbite!

Always wear protective goggles when handling refrigerant. If you get refrigerant in your eye, immediately flush your eyes with water for 15 minutes. Seek medical assistance immediately.

Failure to comply could result in death or serious injury.

W0339A

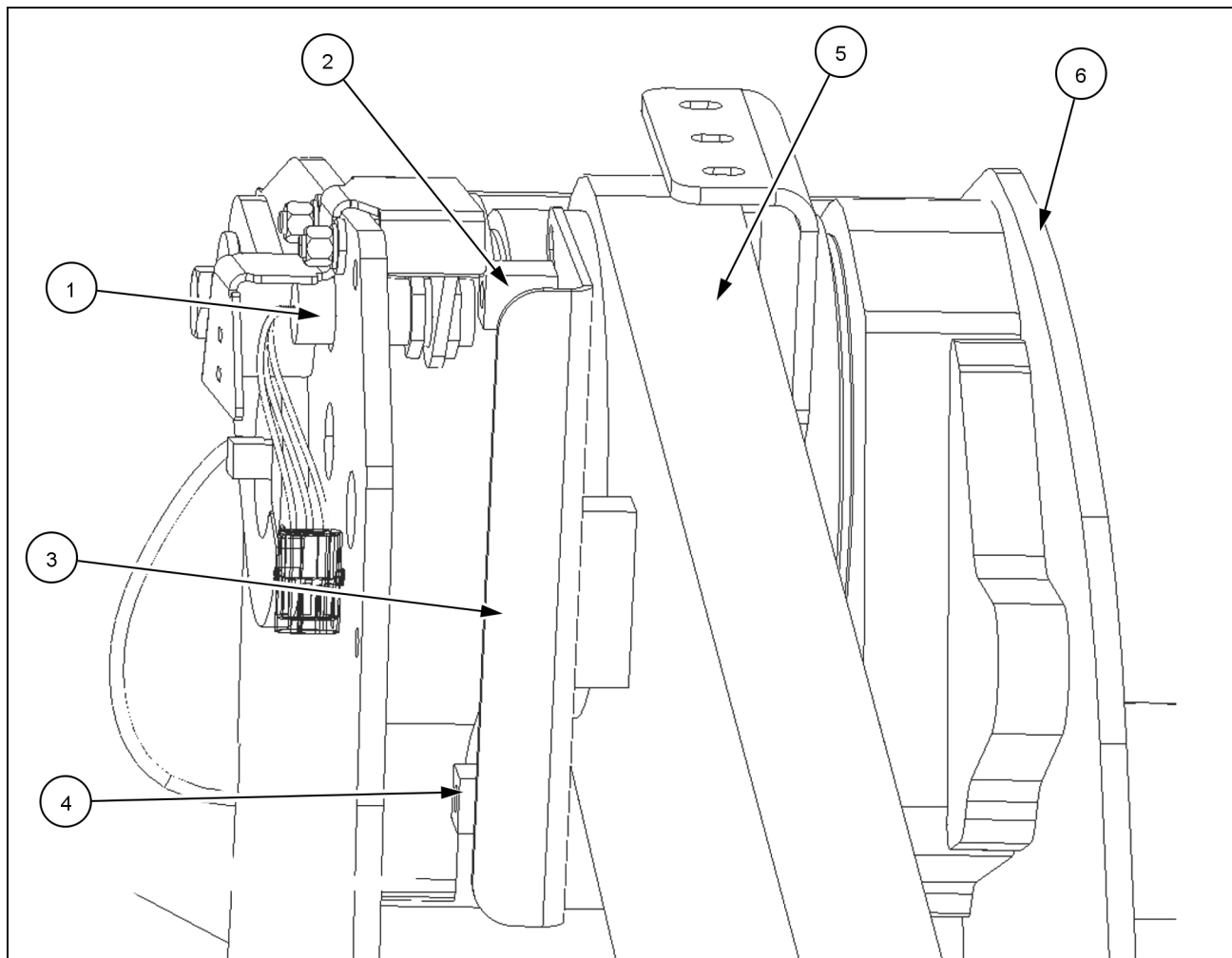
Service the following items as required to maintain maximum operating efficiency:

Lubrication of the air conditioning compressor seal

Operate the air conditioning once every 250 hours to lubricate the compressor seals. Turn the air conditioning control to MAXIMUM for at least **15 min**. In temperatures below **0 °C (32.0 °F)** put a cover over the air conditioning condenser. This will make sure the refrigerant and lubricants in the system will be at operating temperature.

Keep the air conditioning condenser core clean. Use safety type compressed air tool or a rigid brush to clean the condenser. Also check and clean the grille screen

Height control and return to travel [60636941]

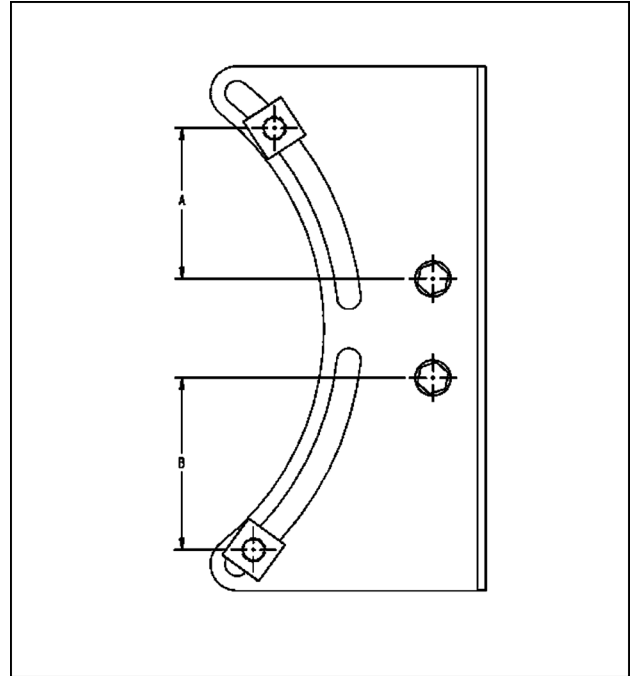


RCPH11WHL031FAH 1

- | | |
|----------------------------|---------------------------------------|
| 1. Proximity switch | 4. Height control target |
| 2. Return to travel target | 5. Lift arm |
| 3. Target mounting plate | 6. Front chassis (top left hand side) |

1. Keep all non-authorized personnel clear of the area. Park the machine on firm, level ground.
2. Start the engine, and apply the parking brake.
3. Lower the lift arms, and place the bucket flat on the ground. Stop the engine.

4. Locate the return to travel target **(2)** opposite the proximity switch and then tighten it to the target mounting plate. Next adjust the proximity switch out toward the target until an air gap of **3.5 - 5 mm (0.1 - 0.2 in)** is obtained. Lock the proximity switch in position with its jam nut. Torque the jam nut to **5 lb ft**.
5. The location of the height control target **(4)** within its slot in the target mounting plate will determine the automatic stopping height of the lift arms as they are raised. The higher the target is positioned in its slot in the target mounting plate, the lower the lift arms will automatically stop as they are raised. Position the target per the table. Tighten the target in this position.
6. The location of the return to travel target **(2)** within its slot in the target mounting plate will determine where the lift arms will automatically stop while they are lowered. The higher this target is located in its slot in the target mounting plate the lower the lift arms will automatically stop as they are lowered. Position the target per the table. Tighten the target in this position.
7. Make sure the proximity switch and all the mounting bolts are tight. Start the engine. Set the detent switch to the on position, and set the return to travel/float detent switch to the return to travel position. Raise the lift arms to approximately the horizontal position. Put the loader control lever in the raise position, and verify that the electromagnet holds it in that position until the height control target passes in front of the proximity switch. Next, with the lift arms still raised, put the loader control lever in the lower position, and verify that the electromagnet holds it in that position until the return to travel target passes in front of the proximity switch. Position the bucket flat on the ground. Shut the machine OFF.

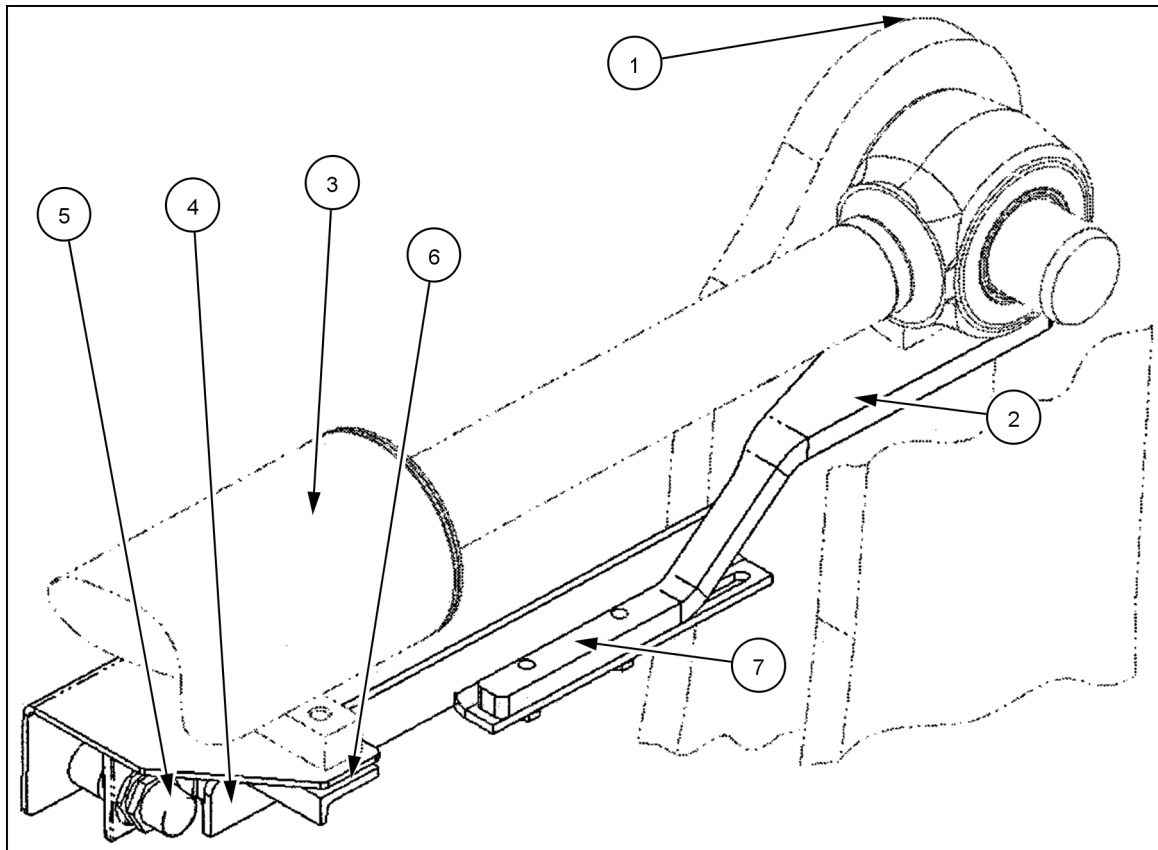


RCPH11WHL281 2

Machine	A	Approximate resulting return to travel hinge pin height	B	Approximate resulting height control hinge pin height
1021F Z-Bar	67.0 mm (2.6 in)	540.0 mm (21.3 in)	75.0 mm (3.0 in)	4140.0 mm (163.0 in)
1021F XR	50.0 mm (2.0 in)	693.0 mm (27.3 in)	60.0 mm (2.4 in)	4140.0 mm (163.0 in)
1121F Z-Bar	59.0 mm (2.3 in)	653.5 mm (25.7 in)	76.0 mm (3.0 in)	4220.0 mm (166.0 in)
1121F XR	46.0 mm (1.8 in)	694.0 mm (27.3 in)	65.0 mm (2.6 in)	4220.0 mm (166.0 in)

Return to dig [60636983]

Z-BAR / XR Return to dig adjustment procedure



RCPH10WHL211BAH 1

- | | |
|----------------------------|--------------------------------------|
| 1. Bell crank | 4. Proximity switch guard |
| 2. Target mounting bracket | 5. Proximity switch |
| 3. Tilt cylinder | 6. Proximity switch mounting bracket |
| | 7. Target bar |

1. Start the engine. Raise the lift arms until they are approximately horizontal. Fully dump the bucket. Lower the arms until bucket edge is on the ground. Shut the machine OFF.
2. Loosen the bolts holding the target mounting bracket to the tilt cylinder eye. Align the target mounting bracket parallel to the tilt cylinder, and tighten the bolts.
3. Loosen the bolts holding the target bar to the target mounting bracket. Align the target bar parallel to the tilt cylinder, and tighten the bolts.
4. Loosen the bolts holding the proximity switch mounting bracket to the tilt cylinder. Position the proximity switch face parallel to the target bar surface, and tighten the bolts. Next adjust the proximity switch out toward the target bar until an air gap of **3.5 - 5 mm (0.1 - 0.2 in)** is obtained. The proximity switch must not protrude past the proximity switch guard. Lock the proximity switch in position with its jam nuts. Torque the jam nut to **5 lb ft**.

5. Start the engine. Position the bucket flat on the ground. Shut the machine off. Loosen the bolts holding the target bar to the target mounting bracket. Slide the target bar towards the proximity switch until the face of the proximity switch is completely covered. Align the target bar parallel to the tilt cylinder, and tighten the bolts.
6. Turn the ignition switch to the on position (not accessory position). Do not start the engine. Position the bucket control lever to the full roll back position. The electromagnetic detent should hold the control lever in this position.
7. Loosen the bolts holding the target bar to the target mounting bracket. Slowly slide the target bar away from the proximity switch. When the proximity switch face is nearly uncovered, the switch will be activated, and the control lever will return to the center position. Tighten the bolts maintaining this location of the target bar. Verify that the **3.5 - 5 mm (0.1 - 0.2 in)** gap is maintained between the target bar and the proximity switch.
8. Make sure the proximity switch and all the mounting bolts are tight. Start the engine. Set the detent switch to the on position, and set the return to travel/float detent switch to the return to travel position. Raise the lift arms to approximately the horizontal position. Position the bucket to the fully dumped position. Put the loader control lever in the roll back position, and verify that the electromagnet holds it in that position until the end of the target bar passes in front of the proximity switch. Lower the lift arms to the ground, and verify the bucket is flat on the ground.

Parking brake [60637033]

⚠ WARNING

Improper operation or service of this machine can result in an accident.

Make sure you perform the required service and adjustments correctly to avoid injury and machine damage.

Failure to comply could result in death or serious injury.

W0352A

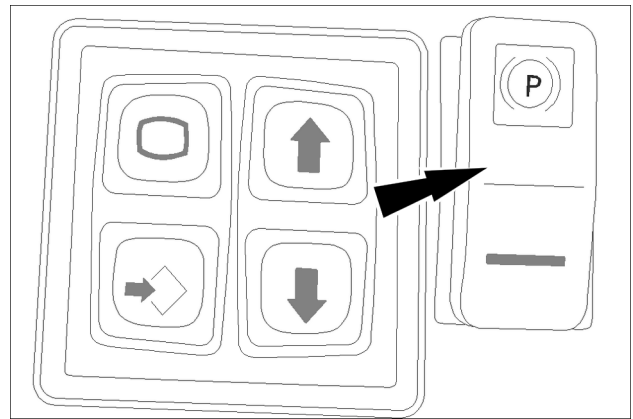
Prior operation:

Keep all non-authorized personnel clear of the area when performing the parking brake test. Park the machine on a firm, level surface clear of any obstructions and any non-authorized personnel or vehicles. Run the machine at low idle in third gear neutral. Place the transmission auto switch to the manual position.

Place the parking brake switch to the ON position.

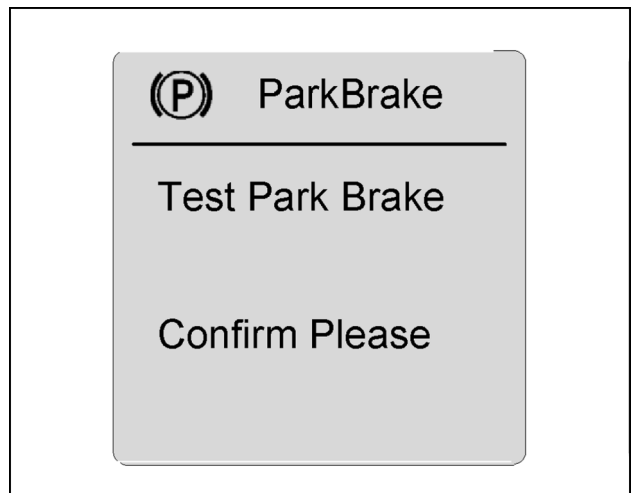
With the engine running at idle, enter the Service Screen Menu and scroll to the Calibration . menu.

Use the arrow key to scroll to the sub menu Park Brake. Highlight Park Brake on the menu and press the confirm key.



RCPH10WHL019BAL 1

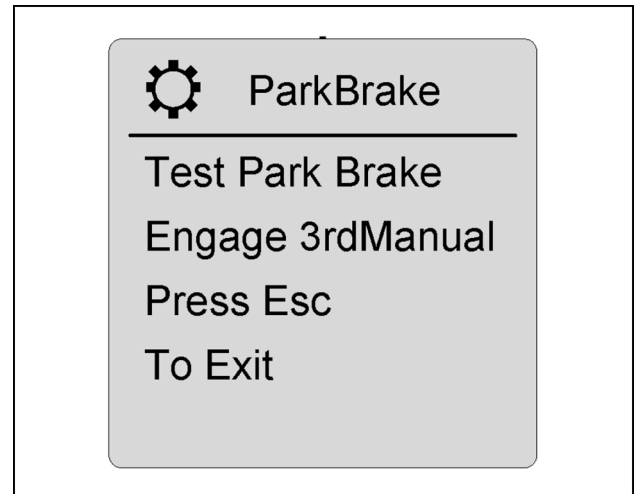
The screen will change to the test park brake screen and request confirmation. To confirm, press the confirm key again.



RCPH10WHL381BAH 2

Follow the prompts on the screen to complete the park brake test. If all conditions are not met to test the brake, the monitor will display the condition that must be corrected prior to completion of the test. The parking brake must be engaged.

1. When all conditions are met, the monitor will display:
Test Park Brake Ready
2. Shift the gear selector into third gear forward, and slowly increase the engine speed to full open throttle.
3. Verify that the machine does not move.
4. Reduce engine speed to low idle, and return the transmission to neutral.
5. Shift the gear selector to third gear reverse and slowly increase the engine speed to wide open throttle.
6. Verify that the machine does not move.
7. Reduce the engine speed to low idle and return the transmission to neutral.
8. Press the escape key on the key pad to exit the test mode.



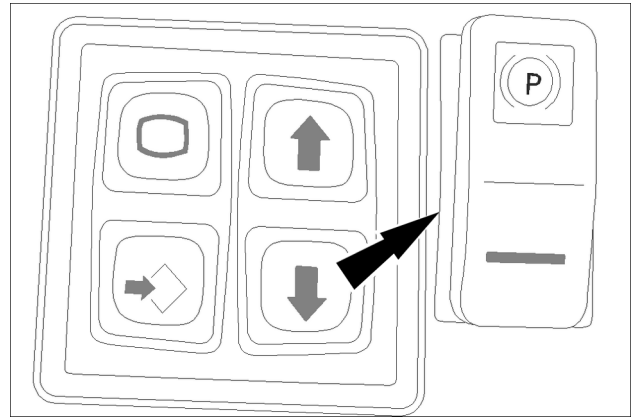
RCPH10WHL382BAH 3

Parking brake check

Before you operate the machine, periodically test the parking brake functions.

NOTE: Test the parking brake at a maximum of every 250 hours.

1. To release the parking brake, all the following are required:
 - A. Push the Parking Brake switch to the release position.
 - B. Service brake depressed indicating brake lights.
 - C. Transmission shifter positioned from **N** to **F** or **R** for a second, and back to **N**.
 - D. Service brake depressed indicating brake lights. Adequate service brake pressure to stop the machine.
2. The parking brake will engage under the following conditions. Always wear your seat belt in the event that the parking brake would unexpectedly engage.
 - A. Loss of service brake pressure in both axles.
 - B. Loss of system electrical power (key OFF).
 - C. Parking Brake switch in engaged position.
3. To test these functions:
 - A. Start on a clear level surface.
 - B. With step 1, **A** through **C** complete, start the engine, and release the parking brake. The red warning light should be out.
 - C. Turn the engine OFF. Turn the key switch to the ON position. With the engine OFF, the parking brake light should come ON.
 - D. Release the parking brake using **B** and **C** in step 1. Make sure the parking brake light is out.
 - E. Pump the service brakes, the low brake pressure warning light should come ON. Continue to pump the service brakes. Pump until the parking brake light comes ON, pump the brakes three more times. This could require as many as forty brake pumps.



RCPH10WHL019BAL 4

- F. Start the engine and allow the brake pressure to build until the warning light goes OFF.
 - G. Depress the service brake and release. The light must stay ON.
 - H. Put the transmission in **F** or **R** and back to **N** the brake light must stay ON.
 - I. Put the parking brake switch in the engaged position, attempt **B** and **C** in step 1. The parking brake light must stay ON.
4. Put the parking brake switch in the release position, attempt **B** and **C** in 1. The parking brake light must turn OFF,
- A. Allow the machine to roll slowly forward with the transmission in **F** . Engage the parking brake. The machine must come to a stop immediately. Parking light ON. Transmission disengages.

If there is any problem with the parking brake test, contact your dealer.

Secondary Steering (optional) [60637076]

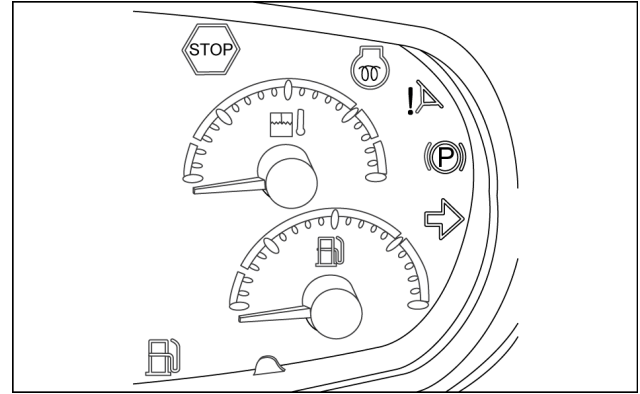
The secondary steering system is electrically powered. This system allows you to steer the machine if the primary steering system stops working. Maintain the batteries to assure the system will function.

Check the secondary steering when the hour meter reads 250 hours or any time electronic warnings may so indicate.

Prior operation:

Keep all non-authorized personnel clear of the area. Park the machine on hard packed level ground with enough clearance around the machine to allow complete steering from side to side. Raise the bucket approximately **500 mm (19.7 in)** above the ground.

1. With the key switch on and the engine off, confirm the secondary steering light within the cluster is on. This indicates the steering pressure is low.
2. Start the machine and let the engine run for a few seconds. Confirm the secondary steering light is out after the first few seconds. This confirms the electrical function of the circuit is operating correctly and adequate pressure has built. The secondary steering module is now functional.
3. With the machine at low idle and steering straight ahead, turn the key switch to the OFF position to stop the engine. Immediately turn the key back to the ON position (not start position). The secondary steering pump/motor should start running. Confirm the light is on and the motor is running.
4. Steer the machine full left and then full right to confirm that the secondary steering pump is working. Confirm there is no lack of steering function.
5. Look at the instrument cluster to verify that the secondary steering light comes on.



RCIL10WHL178BAL 1

NOTICE: Do not run the secondary steering pump/motor continuously for more than 20 seconds at a time without a 2 minute cool down.

6. Restart the engine. Confirm the secondary steering light stays on. The secondary steering motor should stop after approximately 3 seconds and the secondary steering light should go out.
7. If steps 2 through 6 function properly, the secondary steering is operating correctly. If not, repair and retest. If you have any problems with this procedure, call your dealer.

NOTE: Do not turn the ignition off if the machine is turned against either the right hand or left hand steering stop. The steering wheel may kick back.

Cab service [60637103]

Inspecting and cleaning the machine

⚠ WARNING

Moving parts!

Install all covers, panels, and guards after servicing or cleaning the machine. Never operate the machine with covers, panels, or guards removed.

Failure to comply could result in death or serious injury.

W0135A

Maintenance specifications

Inspect and clean	Periodically
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Clean immediately if oil or grease has been spilled on the machine. Clean with steam or a high pressure water jet.

Look for any leaks, and check the condition of all pipes and hoses.

Take the opportunity during this operation to make a visual check of all the welded components (in case of appearance of cracks), the bucket/attachment linkages and check the teeth and tooth tips for correct retention and for wear.

Cab headliner

The foam headliner in your cab decreases noise. To keep the headliner in good operating condition, remove dust with a vacuum cleaner.

NOTICE: DO NOT wash the headliner with water. Water can cause damage to the headliner and lower the noise control capacity of the headliner.

Operator's seat

⚠ WARNING

Chemical hazard!

Always wear protective clothing and goggles when cleaning with solvents, acids, or alkaline chemical agents. Always follow the chemical manufacturer's instructions.

Failure to comply could result in death or serious injury.

W0180A

Remove dust and dirt from the seat with a vacuum cleaner or soft brush. Clean stains with the correct use of a material cleaner.

Before removing stains, try to find what type and how old the stains are. Some stains can be removed with water or soap solution.

Cleaning Fluid - This type of cleaner can be used for grease or oil stains. Carefully remove the item that caused the stain with a scraper or a dull knife.

Use a minimum amount of cleaner and a clean cloth. Move the cloth from the outside of the stain towards the center. When the stain is removed, use a clean cloth to dry the area to prevent a cleaning fluid pattern.

Door hinges

Use graphite to lubricate all hinges. DO NOT use oil.

Plastic and resin parts

When cleaning the plastic windows, the console, the instrument panel, the indicators, etc. do not use gasoline, kerosene, paint solvents, etc. Only use water, soap and a soft cloth.

The use of gasoline, kerosene, paint solvents, etc. will cause discoloration, cracks or deformation of these parts.

Checking for cylinder leakage

A cylinder rod should be slightly oily. Check that there are no leaks after a period of work, when the whole hydraulic system is at normal operating temperature.

1. Wipe the rod and bearing clean on the cylinder to be checked.
2. Operate normally for five or ten minutes.
3. Extend the cylinder rod.
4. Carry out the leak test.

Rod Appearance	Test	Conclusion
Dry	Slight traces of oil when a piece of paper is wiped over 20 cm (7.9 in) of the rod.	Normal
Slightly greasy	Paper remains stuck to rod when run over rod.	Normal
Oily	Paper remains stuck when placed on rod.	Normal
Very oily or weeping	Each time the cylinder rod is extended, a ring of oil can be seen on the rod.	See your dealer
Leakage	Each time the rod retracts, the excess oil drips from the gland.	

Fire extinguisher (not supplied)

It is strongly recommended a fire extinguisher be kept on the machine. An extinguisher is not supplied but can be purchased separately and placed in the rear left-hand side compartment. A specific bracket has been provided for this purpose.

Maintenance specifications	
Every month	Examine the fire extinguisher and make sure it is not damaged.
Every six months	Have an approved specialist empty and refill the fire extinguisher.
Every year	Have an approved specialist examine the fire extinguisher.

Welding on the machine

DANGER

Improper operation or service of this machine can result in an accident.

Any unauthorized modifications made to this machine can have serious consequences. Consult an authorized dealer on changes, additions, or modifications that may be required for this machine. Do not make any unauthorized modifications.

Failure to comply will result in death or serious injury.

D0030A

Whenever carrying out a welding operation on the machine as authorized by the manufacturer and in accordance with manufacturer's instructions, disconnect the batteries, disconnect the alternator B+ and D+ terminal wires, and connect the welding apparatus ground cable to the component on which the welding operation is to be performed.

Always connect the welding apparatus to the same structure that is being welded.

Never connect the welding apparatus ground to a component of the hydraulic system.

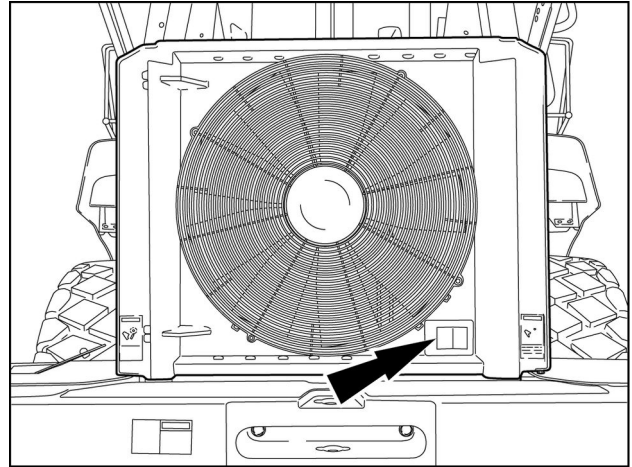
Machine inspection and cleaning [60637153]

Prior operation:

Keep all non-authorized personnel clear of the area. Park the machine on a firm, level surface, lower bucket/attachment to the ground and apply the parking brake.

Cooling box components

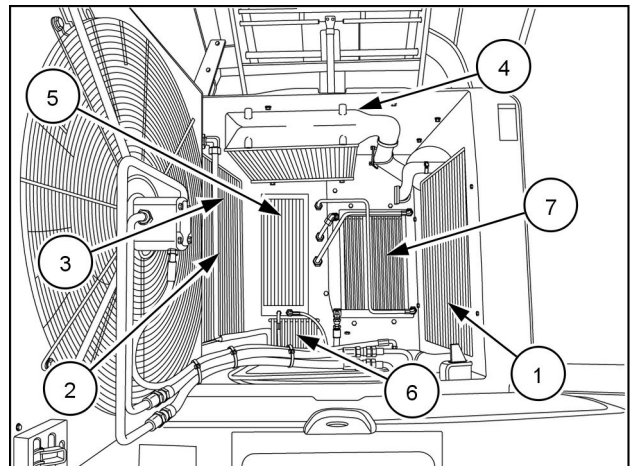
1. Periodically check the cooling box components for dirt and debris build up. The fan reversing feature will normally keep this area clear of any build-up. If necessary the area can be cleaned with compressed air or water. Do not use high pressure water spray on components as this may damage air conditioning fins.
2. To access the cooling box, raise the hood and use the latch to open fan door.



RCPH11WHL322AAH 1

NOTE: When closing the fan door, take care to lift the door strut slightly to allow door to close. Do not force door closed, as this may damage the strut and latch mechanism.

3. The following components are located within the cooling box:
 - (1) Radiator
 - (2) Transmission cooler
 - (3) Hydraulic cooler
 - (4) Charge air cooler
 - (5) Air conditioner condenser
 - (6) Fuel cooler
 - (7) Axle cooler (if equipped)



RCPH11WHL124AAH 2

ELECTRICAL SYSTEM

Battery service [60637204]

WARNING

Battery acid causes burns. Batteries contain sulfuric acid.
Battery electrolyte contains sulfuric acid. Contact with skin and eyes could result in severe irritation and burns. Always wear splash-proof goggles and protective clothing (gloves and aprons). Wash hands after handling.
Failure to comply could result in death or serious injury.

W0120A

WARNING

Electrical shock hazard!
Do not reverse battery terminals. Connect positive cable ends to positive terminals (+) and negative cable ends to negative terminals (-).
Failure to comply could result in death or serious injury.

W0262A

WARNING

Improper operation or service of this machine can result in an accident.
Before working on any component(s) of the electrical circuit, put the starter switch key in the off (shut down) position. When disconnecting batteries, always disconnect the negative (-) cable first. When reconnecting batteries, always connect the negative (-) cable last.
Failure to comply could result in death or serious injury.

W0264A

WARNING

Hazardous chemicals!
Battery electrolyte contains sulfuric acid. Contact with skin and eyes could result in severe irritation and burns. Always wear splash-proof goggles and protective clothing (gloves and aprons). Wash hands after handling.
Failure to comply could result in death or serious injury.

W0006A

WARNING

Battery acid causes burns. Batteries contain sulfuric acid.
Avoid contact with skin, eyes or clothing. Antidote (external): Flush with water. Antidote (eyes): flush with water for 15 minutes and seek medical attention immediately. Antidote (internal): Drink large quantities of water or milk. Do not induce vomiting. Seek medical attention immediately.
Failure to comply could result in death or serious injury.

W0111A

WARNING

Electrical shock hazard!
Before working on any part of the electrical system, disconnect the battery ground cable. Complete all electrical work before connecting the cable.
Failure to comply could result in death or serious injury.

W0129A

WARNING

Explosion hazard!
If battery electrolyte is frozen, attempting to charge the battery or jump-start the engine can cause the battery to explode. Always keep batteries at full charge to prevent frozen battery electrolyte. Never charge a frozen battery.
Failure to comply could result in death or serious injury.

W0203A

WARNING

Chemical hazard!

Battery posts, terminals, and related accessories contain lead and lead compounds. Wash hands after handling.

Failure to comply could result in death or serious injury.

W0349A

WARNING

Improper operation or service of this machine can result in an accident.

Welding sparks can cause battery gases to explode. When welding on the machine, always disconnect the B+ and D+ wires from the alternator. Check the wire markings before reconnecting to ensure a correct connection.

Failure to comply could result in death or serious injury.

W0253A

Battery service

Before you service components of the electrical system, always disconnect the NEGATIVE (-) battery cable.

Dirt, moisture, and corrosion on the battery will discharge the battery. Clean the battery with Case Battery Saver and Cleaner. Follow the instructions on the container.

Disconnect the alternator wires if you must run the engine with the battery wires disconnected.

Before you use an electric welder, disconnect the alternator wires, instrument cluster, and turn the master disconnect switch to OFF.

Do not use a steam cleaner or cleaning solvent to clean the alternator.

Battery vents

Keep the battery vents clean, make sure the vents are not restricted.

Cleaning the batteries

Check the batteries and battery compartment regularly for dirt, corrosion and damage. Dirt mixed with electrolyte or moisture on the top of the batteries can cause a discharged condition in the batteries. Use one of the following methods to clean the batteries.

- Use a commercial battery cleaning product. Follow the instructions on the container.

Use baking soda or ammonia and flush the outside of the batteries with water if you do not have a commercial battery cleaning product.

Alternator

Service specification	
Check	Every 1000 hours

Ask your Dealer to check the alternator.

Do not use steam cleaning equipment or a cleaning solvent to clean the alternator.

Starter motor

Service specification	
Check	Every 1000 hours

Ask your Dealer to check the starter motor.

Make sure that the terminal protectors are correctly installed.

Battery electrolyte level [60637245]

⚠ WARNING

Hazardous chemicals!

Battery electrolyte contains sulfuric acid. Contact with skin and eyes could result in severe irritation and burns. Always wear splash-proof goggles and protective clothing (gloves and aprons). Wash hands after handling.

Failure to comply could result in death or serious injury.

W0006A

⚠ WARNING

Battery acid causes burns. Batteries contain sulfuric acid.

Avoid contact with skin, eyes or clothing. Antidote (external): Flush with water. Antidote (eyes): flush with water for 15 minutes and seek medical attention immediately. Antidote (internal): Drink large quantities of water or milk. Do not induce vomiting. Seek medical attention immediately.

Failure to comply could result in death or serious injury.

W0111A

⚠ WARNING

Chemical hazard!

Battery posts, terminals, and related accessories contain lead and lead compounds. Wash hands after handling.

Failure to comply could result in death or serious injury.

W0349A

Check battery fluid level and specific gravity

Check the battery fluid level every 500 hours of operation or more often if conditions are severe. The battery fluid can decrease with high temperatures.

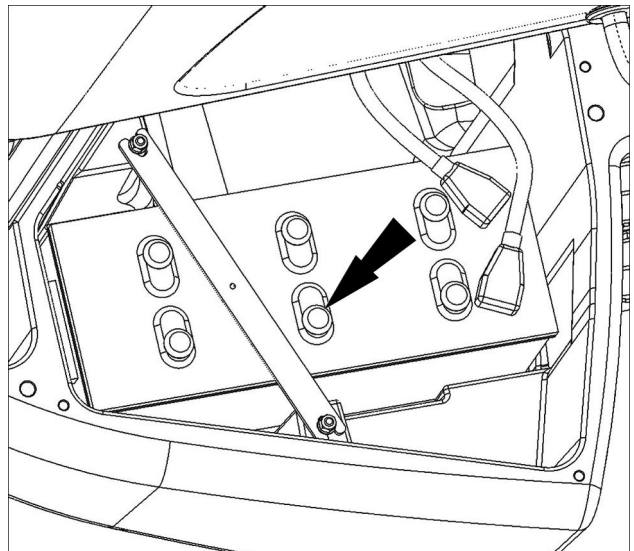
1. Insert a flat blade screwdriver into slots at the top of battery caps. Remove the cell caps and check the level in each battery cell. The level should be no less than **4.8 mm (0.2 in)** from the bottom of the cell. Add distilled water if necessary, then install the cell caps.

NOTE: Wipe the top of the battery or use compressed air to remove dust. Use care when removing caps and do not allow dirt or contaminants to enter the battery cells.

NOTICE: Continuous use of the battery with low fluid will lower battery performance.

2. If the terminals are dirty, wash with warm water. Reinstall the terminals, apply grease or spray rust preventive solution to create good connections.
3. If the terminal is oxidized, polish it with a wire brush or emery paper.

NOTE: Measure the specific gravity of battery fluid with a gravimeter. The measured value will vary depending on the ambient temperature.



RCPH11WHL330AAH 1

Auxiliary battery connections [60637287]

⚠ WARNING

Improper operation or service of this machine can result in an accident. An error connecting auxiliary starting cables or short-circuiting battery terminals can cause an accident. Connect auxiliary starting cables as instructed in this manual. Failure to comply could result in death or serious injury.

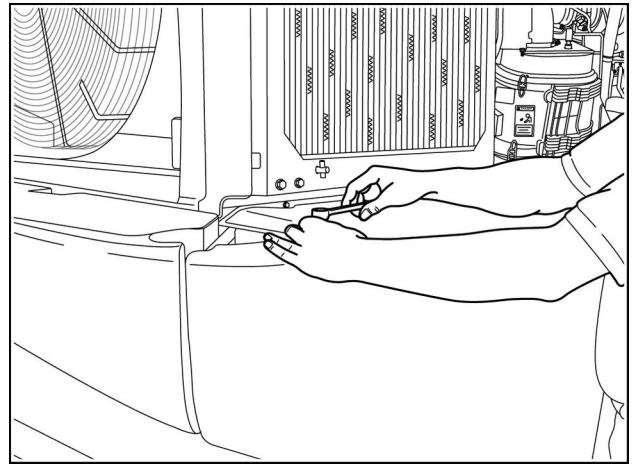
W0263A

⚠ WARNING

Explosion hazard!
Booster batteries or jumper cables must be connected properly to prevent battery explosion and/or damage to the electrical system. Connect positive to positive and negative to negative. Failure to comply could result in death or serious injury.

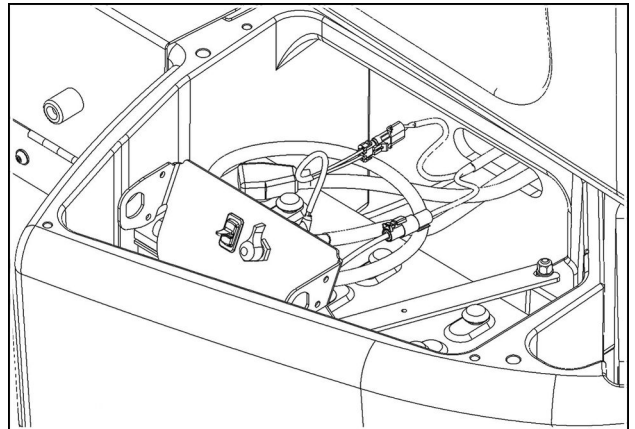
W0343A

Make sure that the voltage of the booster batteries is the same as that of the machine system (**24 V**). The batteries are enclosed in compartments on both the left and right hand rear of the machine. To access the batteries, loosen and remove the bolts the hold the cover in place.



RCPH11WHL130AAH 1

1. Turn off the ignition and all accessories on the machine(s). Remove the battery cover from left hand side of the machine. Remove the battery terminal cover.
2. Connect one end of the positive (+) cable to the positive (+) terminal on the booster battery. Connect the other end of the positive (+) cable to the positive (+) terminal of the discharged battery.
3. Connect the negative (-) cable to the negative (-) terminal on the booster battery.
4. Connect the other end of the negative cable to the engine block or frame of the machine with the discharged battery. Do not connect it to sheet metal or any rotating part, as damage can result. Do not connect to the negative terminal on the battery.
5. Start the engine.
6. Remove the booster battery negative (-) cable from the machine, then from the booster battery. Remove the positive (+) cable from the machine and then from the booster battery.
7. Install the terminal covers.

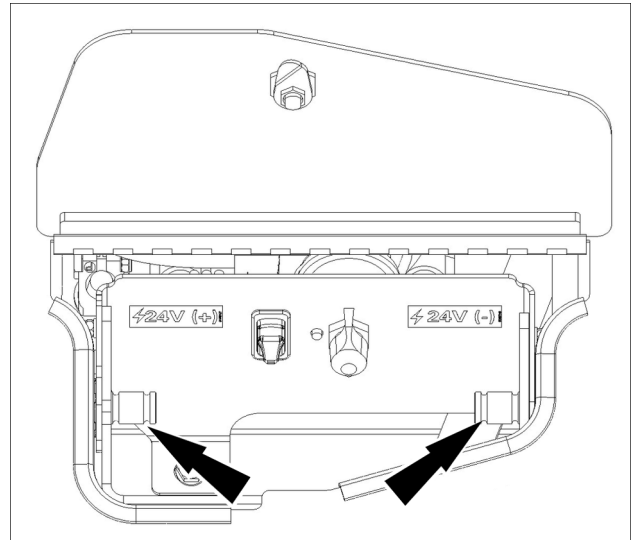


RCPH11WHL331AAH 2

Jump post (Optional)

Make sure that the voltage of the booster batteries is the same as that of the machine system (**24 V**). The jump post is located on the left hand side of the machine along with the main electrical disconnect compartment.

1. Turn off the ignition and all accessories on the machine(s). Use the jump posts to connect the auxiliary battery.
2. Connect one end of the positive (+) cable to the positive (+) terminal on the booster battery. Connect the other end of the positive (+) cable to the positive (+) terminal of the jump post (red).
3. Connect the negative (-) cable to the negative (-) terminal on the booster battery.
4. Connect the other end of the negative cable to the negative (black) terminal of the jump post. Do not connect it to sheet metal or any rotating part, as damage can result. Do not connect to the negative terminal on the battery.
5. Start the engine.
6. Remove the booster battery negative (-) cable from the jump post and then from the booster battery. Remove the positive (+) cable from the jump post terminal and then from the booster battery.
7. Install the terminal covers.



RCPH11WHL094AAH 3

Battery removal and installation [60637328]

⚠ CAUTION

Heavy parts!

Machine batteries are extremely heavy. Make sure the battery is supported safely during the removal process.

Failure to comply could result in minor or moderate injury.

C0050A

⚠ WARNING

Chemical hazard!

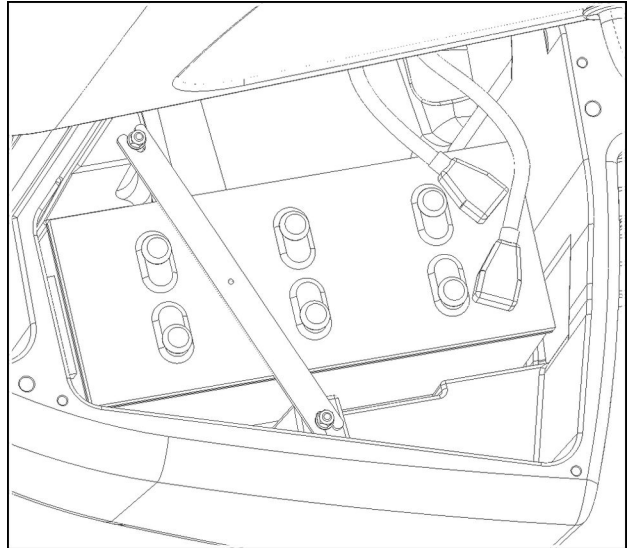
When lifting a plastic-cased battery, excessive pressure on the end walls could cause acid to spill through the vent caps. Lift a plastic-cased battery with a battery carrier or with your hands positioned on opposite corners of the battery. Always wash your hands after handling.

Failure to comply could result in death or serious injury.

W0385A

Replacing the battery

1. Remove the terminal protection caps, disconnect cables (black negative terminals) and then cables (red positive terminals). Remove the anti-sulfate pellets.
2. Remove the screws, the washers, and retainer. Remove the old batteries.
3. Install new batteries of the correct voltage and replace retainer, washers and screws.
4. Clean the cables and battery terminals, and coat with grease. Install new anti-sulfate pellets.
5. Reconnect positive cable ends to positive terminals first. Reconnect negative cable ends to negative terminals.
6. Install the terminal protection caps.

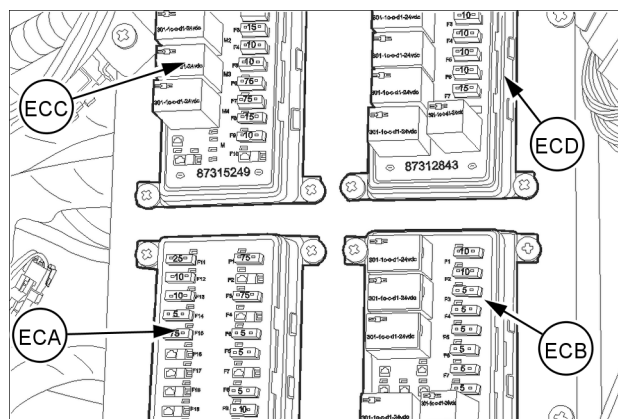


RCPH11WHL306AAH 1

Fuses and relays [101128236]

Fuses and relays can be found inside the access door on the right hand side of the machine.

If power does not come on when the key switch is turned to the ON position, check the appropriate fuse.

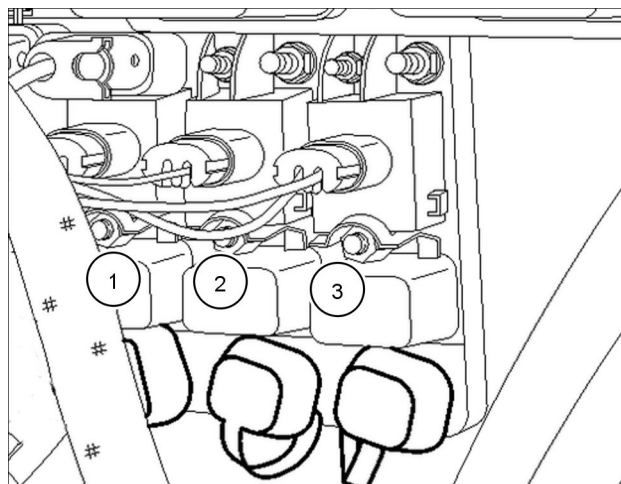


RCPH10WHL044BAL 1

7 - MAINTENANCE

- Before changing fuses or relays, turn the ignition key switch to the OFF (Shut Down) position.

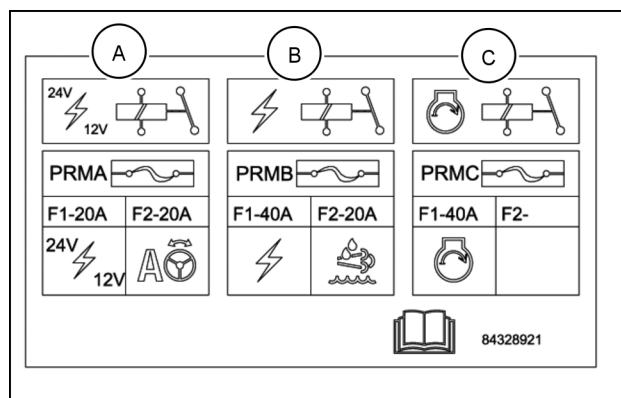
- (1) PRMA
- (2) PRMB
- (3) PRMC



RCPH10WHL591AAH 2

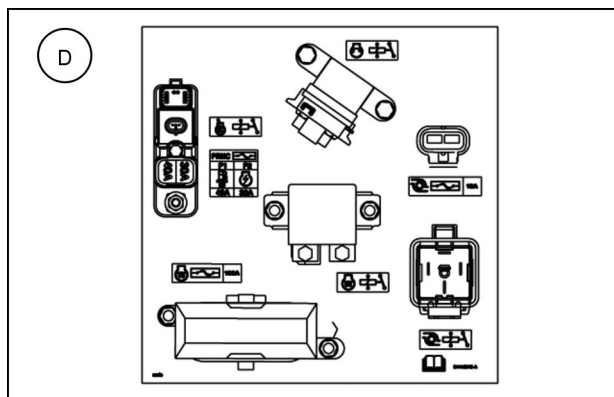
- To replace, pull the old fuse straight out and push the new fuse straight in. The amperage for each fuse is stamped on the fuse. Refer to the fuse panel decal for correct location of each fuse.

NOTICE: Never replace a fuse with a fuse of a different amperage.



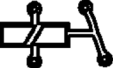
LEEN11T0130AA 3

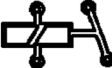
3. Additional fuses and relays are located in the engine compartment area.
Never replace a fuse with a fuse of a different amperage.



LEEN11T0131AA 4

Fuse	Amp	Function
Power relay module A		
F1	20	Power converter
F2	20	DNOX
Power relay module B		
F1	40	Accessory power
F2	20	Secondary steering
		Relay accessory power
Power relay module C		
F1	40	Ignition power
F2		Spare
		Relay ignition power
Power relay module D (Located in engine compartment)		
F1	40	Fuel filter heater
F2	30	Eng ECM
		Relay fuel filter heater

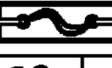



ECC 		
	K1	
	K2	
	K3	
	K4	
	K5	

		
F1		25A
F2		20A
F3		15A
F4		10A
F5		10A
F6		25A
F7		15A
F8		10A
F9		10A
F10		25A

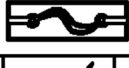
ECD 		
	K1	
	K2	
	K3	
	K4	
	K5	

F1		
F2		
F3		
F4		
F5		
F6		
F7		
F8		
F9		
F10		

ECA 		
F11		25A
F12		10A
F13		10A
F14		5A
F15		25A
F16		15A
F17		25A
F18		15A
F19		5A
F20		

		
F1		25A
F2		10A
F3		25A
F4		25A
F5		25A
F6		5A
F7		25A
F8		5A
F9		10A
F10		5A

ECB 		
	K1	
N	K2	
	K3	
	K4	
	K5	

		
F1	12V 	10A
F2	12V 	10A
F3		5A
F4		5A
F5		5A
F6		5A
F7		5A
F8		5A
F9		10A
F10	12V 	15A



LEEN14T0133HA 5

The fuse decal is located inside the access door.

7-109

Replacement fuses and relays

ECC fuse and relays panel

Fuse	Amp	Function
F1	7.5	Dome lamp - beacon
F2	20	Work lights
F3	15	Driving lights
F4	10	Brake lights - flasher
F5	10	Key switch
F6	7.5	Horn
F7	10	Hood raise - lower
F8	10	AIC power
F9	10	Diagnostic power
F10	7.5	Trans ECM
Relay	Type	Function
KWCO	5 PIN	Front Wiper Cut-Out relay
K1	5 PIN	Hood up (Option)
K2	5 PIN	Hood down (Option)
K3	5 PIN	Work light
K4	5 PIN	Horn
K5	5 PIN	Start inhibit

ECA fuse panel

Fuse	Amp	Function
F1	7.5	Transmission control
F2	10	Steering
F3	7.5	AIC power
F4	7.5	Secondary steering
F5	7.5	LTS
F6	5	Parking brake
F7	7.5	Coupler/fan reverser
F8	5	Turn signal/flasher
F9	10	Engine stop
F10	5	DNOX controller
F11	25	Blower switch
F12	10	Front wiper
F13	10	Rear wiper
F14	5	Backup alarm
F15		
F16	15	Compressor (seat)
F17	7.5	Secondary steering
F18	15	Lighter
F19	5	Camera
F20		

ECB fuse and relays panel

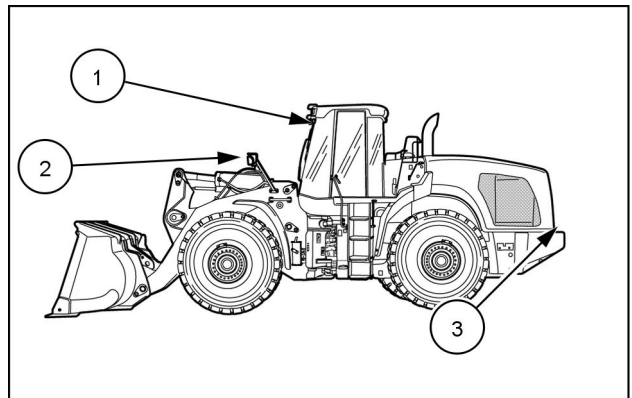
Fuse	Amp	Function
F1	10	Front flood lights
F2	10	Rear flood lights
F3	5	High beam left
F4	5	High beam right
F5	5	Low beam left
F6	5	Low beam right
F7	5	Left tail lights
F8	5	Right tail lights
F9	15	Radio
F10	15	Grid heater
Relay	Type	Function
K1	5 PIN	Ignition power latch
K2	5 PIN	Neutral start
K3	5 PIN	Crank request
K4	5 PIN	Fan reverse (Option)
K5	5 PIN	Parking brake

ECD relays panel

Relay	Type	Function
K1	5 PIN	Front wiper (High speed)
K2	5 PIN	Front wiper (Low speed)
K3	5 PIN	Pilot control
K4	5 PIN	LTS (Option)
K5	5 PIN	A/C (Option)
K6	4 PIN	Brake lights
K7	4 PIN	Ignition power control
K8	4 PIN	Crank control
K9	4 PIN	Nox sensor
K10	4 PIN	Back-up alarm

Work lights [60637601]

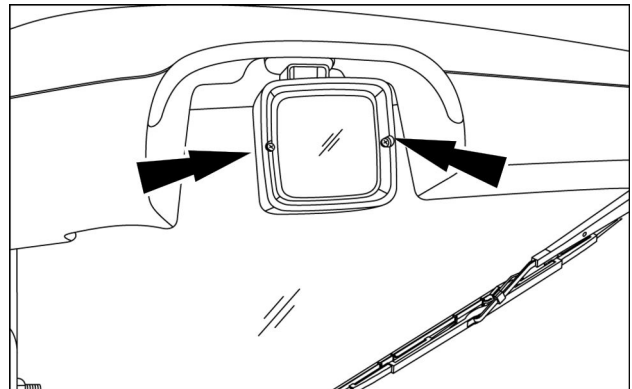
1. Work lights
2. Driving lights
3. Tail lights



RCPH11WHL0032AA 1

To replace work lights, remove the Phillips screws from the front of the light.

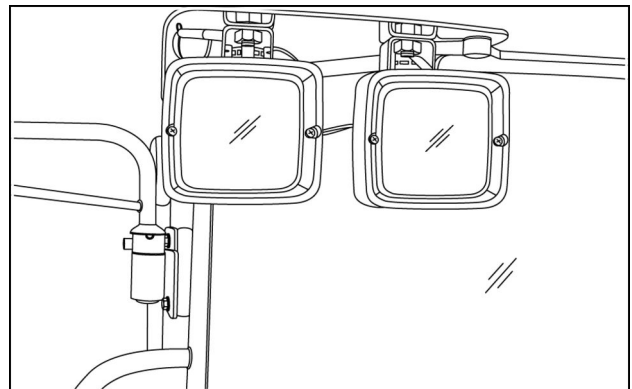
Disconnect push on connectors, and replace the lamp assembly. Push the connectors on, making certain connections are firmly in place. Replace the lamp assembly, and secure the frame with the Phillips screws.



RCPH10WHL501AAH 2

Two light bar work lights (optional)

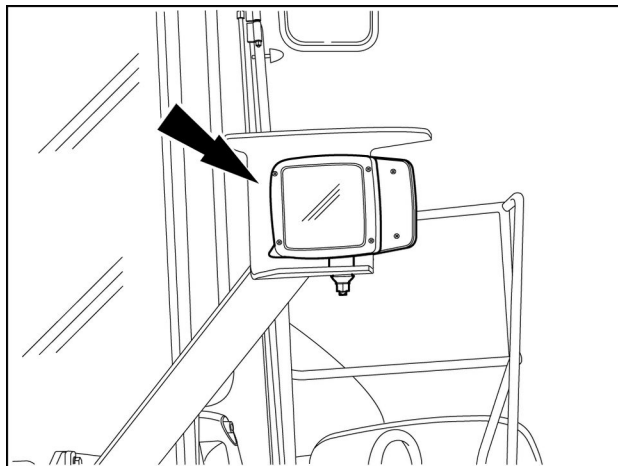
The optional two light work light configuration lamps can be serviced individually. Follow the same procedure as the standard work light assembly.



RCPH10WHL503AAH 3

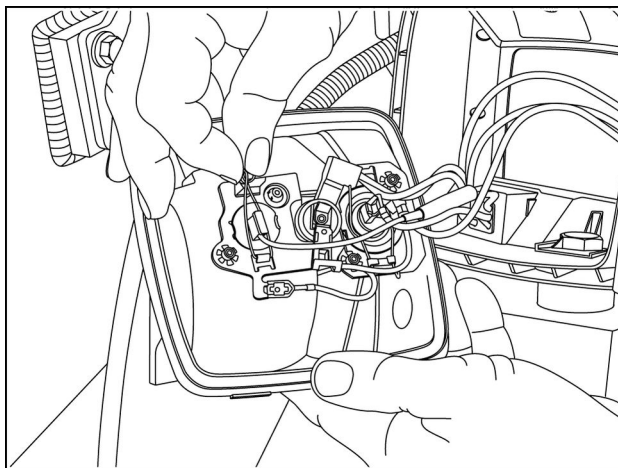
Driving lights [60637717]

To replace driving lights, remove the Phillips screws from the front of the light.



RCPH11WHL239AAH 1

Disconnect push on connectors, and replace the lamp assembly. Push the connectors on, making certain connections are firmly in place. Replace the screws.

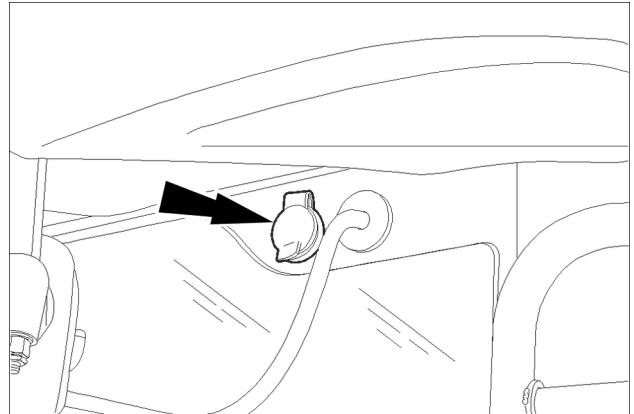


RCPH10WHL431AAH 2

Rotating beacon light [60637758]

Rotating beacon connection

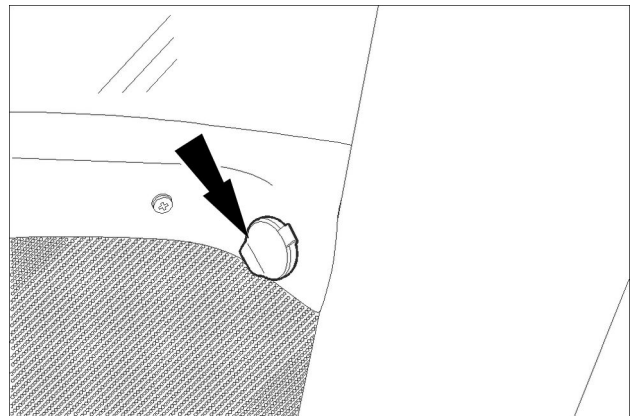
The rotating beacon is an optional feature. The plug-in connection for the beacon is located at the top right front of the cab.



RCPH10WHL080BAL 1

Auxiliary power outlet

The Auxiliary Power Outlet socket (**12 V**) can be used for the connection of a lighting device to help with service and maintenance procedures. There are two auxiliary power outlets, one in the right corner of the operator's compartment, and one in the left corner of the operator's compartment.

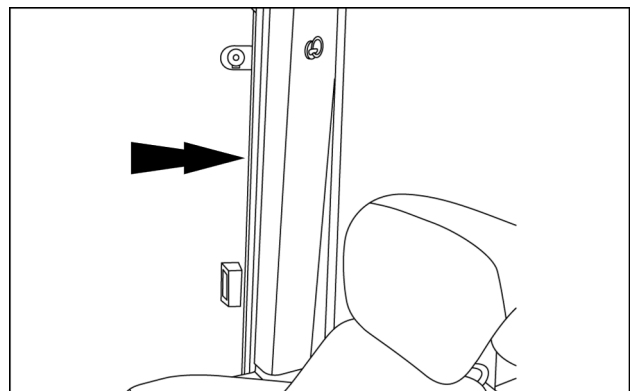


RCPH10WHL040BAL 2

Auxiliary power equipment mounting bracket

The auxiliary power equipment mounting brackets are located behind the right and left **ROPS** post covers. These brackets are for mounting radios, phones, etc.

To locate the bottom of the mounting bracket measure **300 mm (11.8 in)** from the bottom edge of the plastic panel. To locate the top of the mounting bracket measure **420 mm (16.5 in)** from the bottom edge of the plastic panel. The mounting bracket is approximately **70 mm (2.8 in)** wide.



RCIL10WHL276BAL 3

STORAGE

Preparation for storage [60638092]

The following procedure applies when the machine is to be stored for a month or more. Store the machine on firm, level ground, inside a building or, if not possible, outside and covered with a tarpaulin. Before storing the machine, carry out the following operations:

1. Clean the machine.
2. Retract the arm cylinder rod as far as possible, and lower the boom until the attachment is resting on the ground.
3. Grease the machine thoroughly. The exposed surfaces of the cylinder rods should be greased or covered with a protective film. See your dealer.

NOTE: *When the machine resumes service, the film will disappear automatically*

1. Drain the fuel tank, and fill with a mixture of **90 %** diesel fuel and **10 %** anti-corrosive oil. Run the engine at idle speed for five minutes to allow the anti-corrosive oil to reach the lines, filters, pump and injectors.
2. While the engine is still warm, drain the oil sump, fill with anti-corrosive oil, and replace the engine oil filter.
3. When the engine is cold, clean the outer parts of the engine with diesel fuel.
4. Clean or replace the air filter element.
5. Drain the cooling system, leave the drain valves open, and do not tighten the radiator cap.
6. Grease the cylinder rods.
7. Remove the batteries, clean the battery housings and make sure not to leave any traces of acid. Store the batteries safely in a cool and dry location, where the temperature will be higher than **0 °C (32.0 °F)**.
8. Paint any areas where the paint shows signs of deterioration.
9. Plug the air filter inlet and the exhaust pipe.
10. Remove the starter switch key and place a "DO NOT OPERATE" label on the right-hand control arm.
11. Lock the hoods and the cab door.

Every 30 days [60638278]

Periodic checks

Every month, check:

1. The battery charge and battery electrolyte level. Recharge the batteries if required.
2. The grease on the cylinder rods and/or perform attachment functions monthly.
3. The fuel level in the fuel tank and the corrosive oil level in the engine. Add more if necessary.
4. The condition of all lines, connectors and clamps (rust). Grease if necessary.
5. The condition of the paint work. Apply a coat of anti-rust treatment where necessary.

Removal [60638436]

Starting up after storage

WARNING

**Inhalation hazard! Risk to operators and bystanders.
Avoid running the engine in confined areas. Make sure there is adequate ventilation at all times.
Failure to comply could result in death or serious injury.**

W0156A

1. Close the drain valves and fill the cooling system.
2. Drain the fuel reservoir and top up with suitable fuel, see "Fluids and Lubricants" section in this manual.
3. Drain the engine sump, fill with clean engine oil and check the oil level.
4. Replace the filtering element of the fuel filters.
5. Install the batteries.
6. Grease the machine thoroughly.
7. Check the condition of the engine accessory drive belt, and replace it if necessary.
8. Check the condition of the air conditioning drive belt and replace it if necessary.
9. Check the hydraulic fluid level, and add more fluid if necessary.
10. Check the travel reduction gears and swing reduction gear oil level, and add more oil if necessary.
11. Clean the cylinder rods.
12. Unplug the air filter inlet and the exhaust pipe.
13. Remove the "DO NOT OPERATE" tag and start the engine, following the starting up procedure. Keep non-authorized personnel clear of the machine.
14. Keep a careful watch on all systems display panel lamps and indicators.

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General specifications [60638681]

1021F Model

1021F Engine Specifications

Model	It depends on the production plant: FPT F2CFA614C * E020 Tier 2 Certified or FPT F2CFA614C * E019 Tier 2 Certified
Type	4-stroke, turbocharged, air-to-air cooled
Cylinders	6
Bore / Stroke	117 mm (4.61 in) x 135 mm (5.31 in)
Displacement	8.7 l (531 in³)
Fuel Injection	Electronic
Horsepower	
Maximum power (rated/peak)	
Gross	239 kW (320 Hp) @ 1800 RPM
Net	221 kW (296 Hp) @ 1800 RPM
Standard power (peak)	
Gross	222 kW (297 Hp) @ 1800 RPM
Net	204 kW (273 Hp) @ 1800 RPM
Economy power (peak)	
Gross	188 kW (253 Hp) @ 1400 RPM
Net	180 kW (241 Hp) @ 1400 RPM
Torque (maximum)	
Standard power range	
Gross	1374 N·m (1013 lb ft) @ 1100 RPM
Net	1337 N·m (986 lb ft) @ 1100 RPM
Maximum power range	
Gross	1479 N·m (1091 lb ft) @ 1100 RPM
Net	1442 N·m (1064 lb ft) @ 1100 RPM
Economy power range	
Gross	1285 N·m (948 lb ft) @ 1300 RPM
Net	1234 N·m (910 lb ft) @ 1300 RPM
Economy engine speeds	
Machine idled (alternate low idle)	570 - 630 RPM
Machine idled (cold weather alternate accelerated low idle)	1170 - 1230 RPM
Electrical	
Batteries	Two - 12 V
Alternator	95 A

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Voltage

24 V

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1021F Drivetrain - 4 Speed Transmission

4F/3R Proportional with Electronic Control Module torque sensing auto shift/manual shift and modulation		
Gears	Helical cut	
Gear ratios	Forward	Reverse
1st	3.731	3.731
2nd	2.207	2.207
3rd	1.421	0.970
4th	0.625	
Torque converter stall ratio	3.089:1	
Rear axle oscillation	24 ° total	
Standard Axles	Front	Rear
Differential	Limited slip on front and rear axles	
Differential ratio	4.11	3.182
Planetary ratio	6.00	6.400
Final axle ratio	24.67	20.36
Planetaries	Outboard	
Service brakes	Hydraulically actuated, maintenance-free, multiple wet disc w/accumulator to all four wheels	
Parking brakes	Spring-applied hydraulic release disc on transmission output shaft	
Optional HD Axles	Front	Rear
Differential	Front locking and rear open	
Differential ratio	4.25	4.5
Planetary ratio	6.35	6.0
Final axle ratio	27.0	27.0
Planetaries	Outboard	
Service brakes	Hydraulically actuated, maintenance-free, multiple wet disc w/accumulator to all four wheels	
Parking brakes	Spring-applied hydraulic release disc on transmission output shaft	
Travel speeds (standard axle)	Forward	Reverse
1st	7.7 km/h (4.7 mph)	7.7 km/h (4.7 mph)
2nd	12.6 km/h (7.8 mph)	12.6 km/h (7.8 mph)
3rd	18.9 km/h (11.8 mph)	26.6 km/h (16.5 mph)
4th	38 km/h (23.6 mph)	
Travel speeds (optional HD axle)	Forward	Reverse
1st	7.0 km/h (4.3 mph)	7.0 km/h (4.3 mph)
2nd	11.6 km/h (7.2 mph)	11.6 km/h (7.2 mph)
3rd	17.4 km/h (10.8 mph)	24.6 km/h (15.3 mph)
4th	35.4 km/h (22.0 mph)	

NOTE: Travel speeds @ full engine throttle.

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1021F Cylinder Specifications

Lift cylinder	
Bore diameter	177.8 mm (7.00 in)
Rod diameter	114.3 mm (4.50 in)
Stroke	780.6 mm (30.73 in)
Steer cylinder	
Bore diameter	88.71 mm (3.493 in)
Rod diameter	50.8 mm (2.00 in)
Stroke	518.0 mm (20.39 in)
Dump cylinder	
Bore diameter	203.2 mm (8.00 in)
Rod diameter	127.0 mm (5.00 in)
Stroke	581.9 mm (22.91 in)

Instrumentation Gauges

Speedometer	Engine Coolant Temperature (ECT)	Gear position
Tachometer	Hydraulic oil temperature	Transmission modes
Hourmeter	Transmission oil temperature	Travel selected (FNR)

Operator Environment

ROPS cab with heater	Key start	Articulated power steering with tilt
Adjustable suspension seat	Single lever 2-spool loader control	Cup holder
Coat hook	Interior rear view mirror	Single brake pedal
Storage tray	Dome light	Front and rear windshield washers
Exterior rear view mirrors	Front (intermittent) and rear wipers	52 mm (2 in) retractable seat belt
Right and left steps/platforms	Fire extinguisher bracket	

Hydraulic Specifications

Pump 1	Closed centered pressure/flow compensated
Variable displacement	100.0 cm³/rev (6.1 in³/rev) 190 l/min (50.2 US gpm) @ 2000 RPM
Pump 2	Closed centered pressure/flow compensated
Variable displacement	85.0 cm³/rev (5.19 in³/rev) 162 l/min (42.8 US gpm) @ 2000 RPM
Loader auxiliary steering	hydraulic orbital center-pivot articulating w/on-demand oil flow
Filtration	10-micron, full flow replaceable cartridges on return line, condition indicator light for filter

1121F Model

1121F Engine Specifications

Model	It depends on the production plant: FPT F2CFA614B * E020 Tier 2 Certified or FPT F2CFA614B * E019 Tier 2 Certified
Type	4-stroke, turbocharged, air-to-air cooled
Cylinders	6
Bore / Stroke	117 mm (4.61 in) x 135 mm (5.31 in)
Displacement	8.7 l (531 in³)
Fuel Injection	Electronic
Horsepower	
Maximum power (rated/peak)	
Gross	259 kW (347 Hp) @ 1800 RPM
Net	239 kW (320 Hp) @ 1800 RPM
Standard power (peak)	
Gross	240 kW (322 Hp) @ 1700 RPM
Net	223 kW (300 Hp) @ 1700 RPM
Economy power (peak)	
Gross	208 kW (279 Hp) @ 1400 RPM
Net	199 kW (266 Hp) @ 1400 RPM
Torque (maximum)	
Standard power range	
Gross	1604 N·m (1183 lb ft) @ 1100 RPM
Net	1564 N·m (1154 lb ft) @ 1100 RPM
Maximum power range	
Gross	1550 N·m (1143 lb ft) @ 1400 RPM
Net	1485 N·m (1096 lb ft) @ 1400 RPM
Economy power range	
Gross	1475 N·m (1088 lb ft) @ 1300 RPM
Net	1419 N·m (1047 lb ft) @ 1390 RPM
Economy engine speeds	
Machine idled (alternate low idle)	570 - 630 RPM
Machine idled (cold weather alternate accelerated low idle)	1170 - 1230 RPM
Electrical	
Batteries	2 - 12 V
Alternator	95 A
Voltage	24 V

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1121F Drivetrain - 4 Speed Transmission

4F/3R Proportional with Electronic Control Module torque sensing autoshift/manual shift and modulation		
Gears	Helical cut	
Gear ratios	Forward	Reverse
1st	3.731	3.731
2nd	2.207	2.207
3rd	1.421	0.970
4th	0.625	
Torque converter stall ratio	2.511:1	
Rear axle oscillation	24 ° total	
Standard Axles	Front	Rear
Differential	Open	
Differential ratio	4.25	4.11
Planetary ratio	6.35	6.00
Final axle ratio	27.0	24.67
Planetaries	Outboard	
Service brakes	Hydraulically actuated, maintenance-free, multiple wet disc w/accumulator to all four wheels	
Parking brakes	Spring-applied hydraulic release disc on transmission output shaft	
Travel speeds	Forward	Reverse
1st	6.9 km/h (4.3 mph)	6.9 km/h (4.3 mph)
2nd	11.6 km/h (7.2 mph)	11.6 km/h (7.2 mph)
3rd	17.7 km/h (11.0 mph)	25.5 km/h (15.8 mph)
4th	37.4 km/h (23.2 mph)	

NOTE: Travel speeds @ full engine throttle.

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1121F Cylinder Specifications

Lift cylinder	
Bore diameter	177.8 mm (7.00 in)
Rod diameter	114.3 mm (4.50 in)
Stroke	875.81 mm (34.481 in)
Steer cylinder	
Bore diameter	88.71 mm (3.493 in)
Rod diameter	50.8 mm (2.00 in)
Stroke	518.0 mm (20.39 in)
Dump cylinder	
Bore diameter	203.2 mm (8.00 in)
Rod diameter	127.0 mm (5.00 in)
Stroke	694.7 mm (27.35 in)

Instrumentation Gauges

Speedometer	Engine Coolant Temperature (ECT)	Gear position
Tachometer	Hydraulic oil temperature	Transmission modes
Hourmeter	Transmission oil temperature	Travel selected (FNR)

Operator Environment

ROPS cab with heater	Key start	Articulated power steering with tilt
Adjustable suspension seat	Single lever 2-spool loader control	Cup holder
Coat hook	Interior rear view mirror	Single brake pedal
Storage tray	Dome light	Front and rear windshield washers
Exterior rear view mirrors	Front (intermittent) and rear wipers	52 mm (2 in) retractable seat belt
Right and left steps/platforms	Fire extinguisher bracket	

Hydraulic Specifications

Pump 1	Closed centered pressure/flow compensated
Variable displacement	100.0 cm³/rev (6.1 in³/rev) 190 l/min (50.2 US gpm) @ 2000 RPM
Pump 2	Closed centered pressure/flow compensated
Variable displacement	100.0 cm³/rev (6.1 in³/rev) 190 l/min (50.2 US gpm) @ 2000 RPM
Loader auxiliary steering	hydraulic orbital center-pivot articulating w/on-demand oil flow
Filtration	10-micron, full flow replaceable cartridges on return line, condition indicator light for filter

Lift capacities - 1021F and 1121F Hydraulic Lift Capacities [60639337]

1021F Model Configurations

The following table lists hydraulic lift capacities for **1021F Z-Bar** lift applications:

	Bolt-on Edge Bucket	w/Teeth Bucket
1021F Z-Bar Specifications - 3.6 m³ (4.75 yd³) Bucket		
Full height	14143 kg (31180 lb)	14130 kg (31151 lb)
Maximum reach	20221 kg (44580 lb)	20253 kg (44650 lb)
Ground	23895 kg (52679 lb)	24156 kg (53256 lb)
1021F Z-Bar Specifications - 4.2 m³ (5.5 yd³) Bucket		
Full height	14027 kg (30924 lb)	14016 kg (30900 lb)
Maximum reach	20094 kg (44300 lb)	20126 kg (44370 lb)
Ground	23413 kg (51617 lb)	23659 kg (52160 lb)
1021F Z-Bar Specifications - 4.4 m³ (5.75 yd³) Bucket Flat Bottom with Blade		
Full height	13840 kg (30513 lb)	—
Maximum reach	19901 kg (43875 lb)	—
Ground	23000 kg (50706 lb)	—
1021F Z-Bar Specifications - 4.4 m³ (5.75 yd³) Bucket Flat Bottom with Teeth		
Full height	—	13950 kg (30755 lb)
Maximum reach	—	20082 kg (44273 lb)
Ground	—	23479 kg (51763 lb)

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The following table lists hydraulic lift capacities for **1021F XR** lift applications:

	Bolt-on Edge Bucket	w/Teeth Bucket
1021F XR Specifications - 3.6 m³ (4.75 yd³) Bucket		
Full height	12736 kg (28077 lb)	12730 kg (28064 lb)
Maximum reach	17493 kg (38565 lb)	17532 kg (38561 lb)
Ground	19255 kg (42450 lb)	19441 kg (42861 lb)
1021F XR Specifications - 4.2 m³ (5.5 yd³) Bucket		
Full height	12616 kg (27813 lb)	12612 kg (27804 lb)
Maximum reach	17362 kg (38276 lb)	17401 kg (38362 lb)
Ground	18858 kg (41574 lb)	19034 kg (41964 lb)
1021F XR Specifications - 4.4 m³ (5.75 yd³) Bucket Flat Bottom with Blade		
Full height	12426 kg (27394 lb)	—
Maximum reach	17164 kg (37841 lb)	—
Ground	18497 kg (40779 lb)	—
1021F XR Specifications - 4.4 m³ (5.75 yd³) Bucket Flat Bottom with Teeth		
Full height	—	12546 kg (27659 lb)
Maximum reach	—	17357 kg (38265 lb)
Ground	—	18888 kg (41641 lb)

1121F Model Configurations

The following table lists hydraulic lift capacities for **1121F Z-Bar** lift applications:

	Bolt-on Edge Bucket	w/Teeth Bucket
1121F Z-Bar Specifications - 4.0 m³ (5.2 yd³) Bucket		
Full height	15017 kg (33106 lb)	15007 kg (33086 lb)
Maximum reach	21991 kg (48483 lb)	22026 kg (48559 lb)
Ground	26363 kg (58121 lb)	26620 kg (58687 lb)
1121F Z-Bar Specifications - 4.8 m³ (6.27 yd³) Bucket		
Full height	14853 kg (32745 lb)	14844 kg (32725 lb)
Maximum reach	21813 kg (48090 lb)	21846 kg (48162 lb)
Ground	25732 kg (56730 lb)	25970 kg (57254 lb)
1121F Z-Bar Specifications - 5.0 m³ (6.53 yd³) Bucket Flat Bottom with Blade		
Full height	14623 kg (32237 lb)	—
Maximum reach	21586 kg (47588 lb)	—
Ground	25502 kg (56223 lb)	—
1121F Z-Bar Specifications - 4.8 m³ (6.27 yd³) Bucket Flat Bottom with Teeth		
Full height	—	14751 kg (32521 lb)
Maximum reach	—	21785 kg (48027 lb)
Ground	—	25984 kg (57285 lb)

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The following table lists hydraulic lift capacities for **1121F XR** lift applications:

	Bolt-on Edge Bucket	w/Teeth Bucket
1121F XR Specifications - 4.0 m³ (5.2 yd³) Bucket		
Full height	14358 kg (31654 lb)	14357 kg (31651 lb)
Maximum reach	19764 kg (43573 lb)	19808 kg (43668 lb)
Ground	22150 kg (48833 lb)	22350 kg (49273 lb)
1121F XR Specifications - 4.8 m³ (6.27 yd³) Bucket		
Full height	14189 kg (31281 lb)	14188 kg (31278 lb)
Maximum reach	19578 kg (43163 lb)	19620 kg (43254 lb)
Ground	21598 kg (47616 lb)	21783 kg (48023 lb)
1121F XR Specifications - 5.0 m³ (6.53 yd³) Bucket Flat Bottom with Blade		
Full height	13959 kg (30775 lb)	—
Maximum reach	19351 kg (42663 lb)	—
Ground	21368 kg (47108 lb)	—
1121F XR Specifications - 4.8 m³ (6.27 yd³) Bucket Flat Bottom with Teeth		
Full height	—	14100 kg (31086 lb)
Maximum reach	—	19564 kg (43132 lb)
Ground	—	21782 kg (48022 lb)

Torque charts [60639537]

Use the torques in this chart when special torques are not given. These torques apply to fasteners with both **UNC** and **UNF** threads as received from suppliers dry, or when lubricated with engine oil. Not applicable if special graphite lubricants, Molydisulfide greases, or other extreme pressure lubricants are used.

Decimal hardware

Grade 5 bolts, nuts, and studs

Size	Nm	lb in/lb ft
1/4 in	12 - 15 Nm	108 - 132 lb in
5/16 in	23 - 28 Nm	204 - 252 lb in
3/8 in	48 - 57 Nm	420 - 504 lb in
7/16 in	73 - 87 Nm	54 - 64 lb ft
1/2 in	109 - 130 Nm	80 - 96 lb ft
9/16 in	149 - 179 Nm	110 - 132 lb ft
5/8 in	203 - 244 Nm	150 - 180 lb ft
3/4 in	366 - 439 Nm	270 - 324 lb ft
7/8 in	542 - 651 Nm	400 - 480 lb ft
1 in	787 - 944 Nm	580 - 696 lb ft
1-1/8 in	1085 - 1193 Nm	800 - 880 lb ft
1-1/4 in	1519 - 1681 Nm	1120 - 1240 lb ft
1-3/8 in	1980 - 2278 Nm	1460 - 1680 lb ft
1-1/2 in	2631 - 2983 Nm	1940 - 2200 lb ft

Markings for Grade 5 hardware





Grade 8 bolts, nuts, and studs

Size	Nm	lb in/lb ft
1/4 in	16 - 20 Nm	144 - 180 lb in
5/16 in	33 - 39 Nm	288 - 348 lb in
3/8 in	61 - 73 Nm	540 - 648 lb in
7/16 in	95 - 114 Nm	70 - 84 lb ft
1/2 in	149 - 179 Nm	110 - 132 lb ft
9/16 in	217 - 260 Nm	160 - 192 lb ft
5/8 in	298 - 358 Nm	220 - 264 lb ft
3/4 in	515 - 618 Nm	380 - 456 lb ft
7/8 in	814 - 976 Nm	600 - 720 lb ft
1 in	1220 - 1465 Nm	900 - 1080 lb ft
1-1/8 in	1736 - 1953 Nm	1280 - 1440 lb ft
1-1/4 in	2468 - 2712 Nm	1820 - 2000 lb ft
1-3/8 in	3227 - 3688 Nm	2380 - 2720 lb ft
1-1/2 in	4285 - 4827 Nm	3160 - 3560 lb ft

Markings for Grade 8 hardware





NOTE: Use thick nuts with Grade 8 bolts.

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Metric hardware

Grade 8.8 bolts, nuts, and studs

Size	Nm	lb in/lb ft
4 mm	3 - 4 Nm	24 - 36 lb in
5 mm	7 - 8 Nm	60 - 72 lb in
6 mm	11 - 12 Nm	96 - 108 lb in
8 mm	26 - 31 Nm	228 - 276 lb in
10 mm	52 - 61 Nm	456 - 540 lb in
12 mm	90 - 107 Nm	66 - 79 lb ft
14 mm	144 - 172 Nm	106 - 127 lb ft
16 mm	217 - 271 Nm	160 - 200 lb ft
20 mm	434 - 515 Nm	320 - 380 lb ft
24 mm	675 - 815 Nm	500 - 600 lb ft
30 mm	1250 - 1500 Nm	920 - 1100 lb ft
36 mm	2175 - 2600 Nm	1600 - 1950 lb ft
Markings for Grade 8.8 hardware 		

Grade 10.9 bolts, nuts and studs

Size	Nm	lb in/lb ft
4 mm	4 - 5 Nm	36 - 48 lb in
5 mm	9 - 11 Nm	84 - 96 lb in
6 mm	15 - 18 Nm	132 - 156 lb in
8 mm	37 - 43 Nm	324 - 384 lb in
10 mm	73 - 87 Nm	54 - 64 lb ft
12 mm	125 - 150 Nm	93 - 112 lb ft
14 mm	200 - 245 Nm	149 - 179 lb ft
16 mm	310 - 380 Nm	230 - 280 lb ft
20 mm	610 - 730 Nm	450 - 540 lb ft
24 mm	1050 - 1275 Nm	780 - 940 lb ft
30 mm	2000 - 2400 Nm	1470 - 1770 lb ft
36 mm	3500 - 4200 Nm	2580 - 3090 lb ft
Markings for Grade 10.9 hardware 		

Grade 12.9 bolts, nuts, and studs

Torque values specified for grade 10.9 hardware can be used for grade 12.9 hardware.		
Markings for Grade 12.9 hardware 		

Dimensions specifications - 1021F and 1121F [60639626]

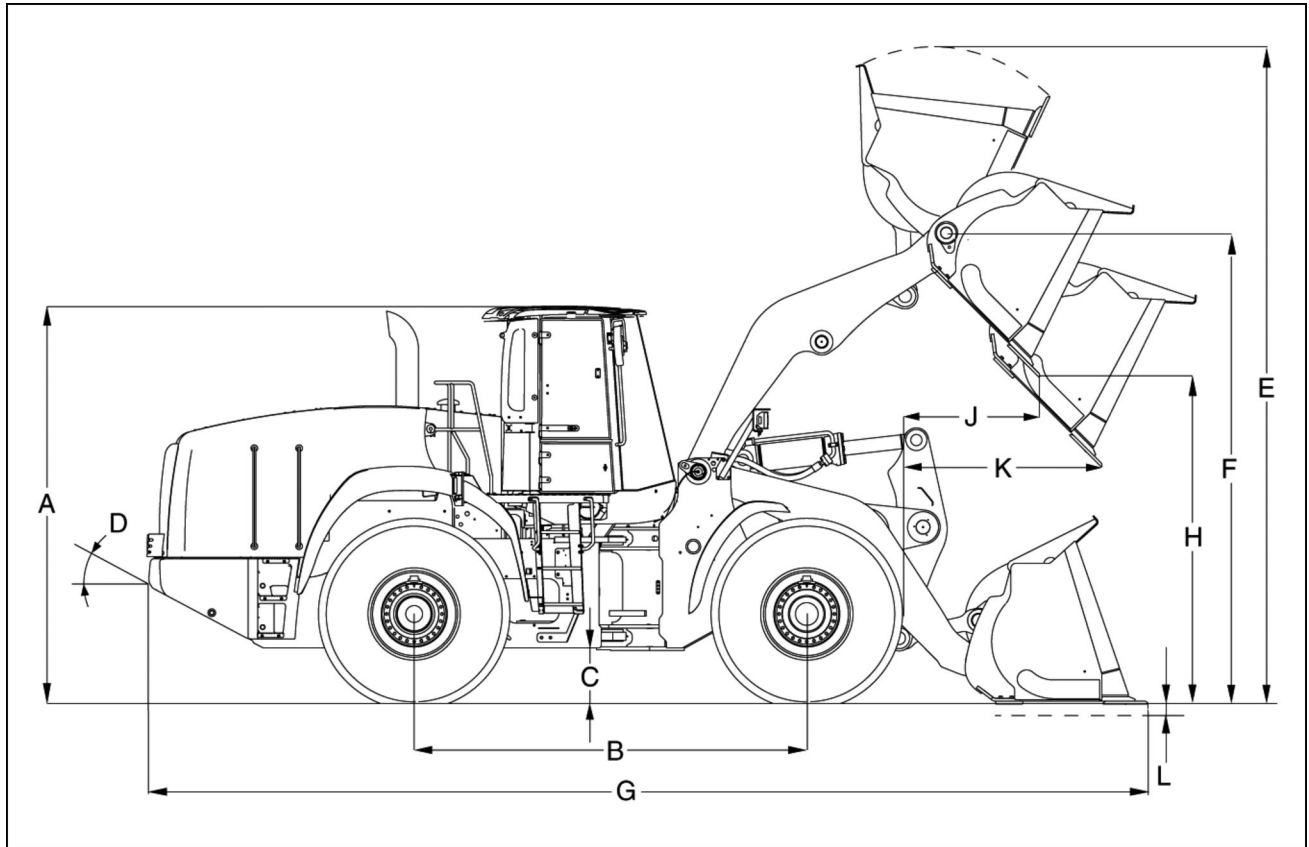
The following specifications are common for all **1021F** and **1121F** model configurations:

1021F and 1121F Common Specifications

Feature	Specification	
Overall height (top of exhaust)	3545 mm (139.6 in)	
Rear axle oscillation total	24 °	
Height to drawbar	1067 mm (42.0 in)	
Vertical wheel travel (trunnion fully oscillated)	480 mm (18.9 in)	
Loader Speeds	1021F	1121F
Loaded raise (rollback @ ground)	6.2 s	6.49 s
Loaded dump (@ full height)	1.3 s	1.4 s
Empty power down	2.8 s	2.8 s
Empty float	2.6 s	2.6 s

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1021F Loader - Lift Arms Specifications



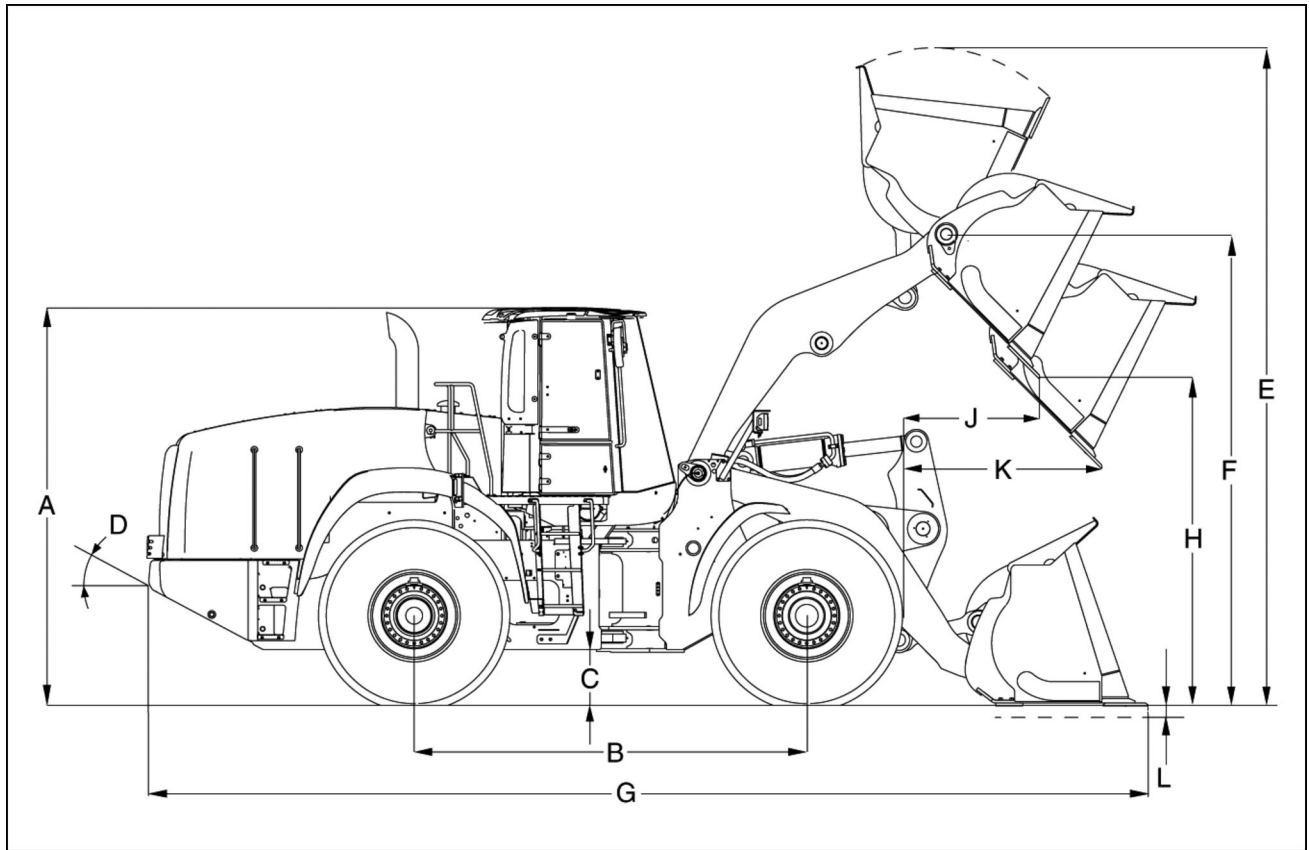
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1021F Z-Bar Specifications - 3.6 m³ (4.75 yd³) Bucket

	Bolt-on Edge Bucket	w/Teeth Bucket
ISO Bucket Specifications		
Struck	3.11 m³ (4.07 yd³)	2.96 m³ (3.87 yd³)
Heaped	3.63 m³ (4.75 yd³)	3.49 m³ (4.56 yd³)
Bucket width (maximum outer)	3195 mm (125.8 in)	3195 mm (125.8 in)
Dimensional Outline Specifications		
A (top of cab height)	3573 mm (140.6 in)	3573 mm (140.6 in)
B (wheelbase)	3550 mm (139.8 in)	3550 mm (139.8 in)
C (ground clearance)	509.4 mm (20.1 in)	509.4 mm (20.1 in)
D (rear angle of departure)	34 °	34 °
Overall width with bucket guard	2990 mm (117.7 in)	2990 mm (117.7 in)
Centerline tread width	2250 mm (88.6 in)	2250 mm (88.6 in)
Turning radius (outside of tires)	6372 mm (250.9 in)	6372 mm (250.9 in)
Turning angle from center	40 °	40 °
Total turning angle	80 °	80 °
E (fully raised with spillguard)	5676 mm (223.4 in)	5676 mm (223.4 in)
F (hinge pin - fully raised)	4243 mm (167.1 in)	4243 mm (167.1 in)
G (overall - bucket level on ground)	8774 mm (345.4 in)	8955 mm (352.5 in)
H (dump - fully raised, 45 ° dump)	3151 mm (124.1 in)	3035 mm (119.5 in)
J (reach - fully raised, 45 ° dump)	1175 mm (46.2 in)	1313 mm (51.7 in)
K (reach - 2.13 m (7.0 ft), 45 ° dump)	1828 mm (72.0 in)	1918 mm (75.5 in)
L (dig depth)	126.0 mm (5.0 in)	126 mm (5.0 in)
ISO Load Specifications		
Operating load	8011 kg (17661 lb)	8076 kg (17803 lb)
Tipping load		
Machine straight	19184 kg (42293 lb)	19335 kg (42627 lb)
40° turn	16021 kg (35321 lb)	16151 kg (35607 lb)

NOTE: *Refer to country regulation foreseen for exceptional vehicles*

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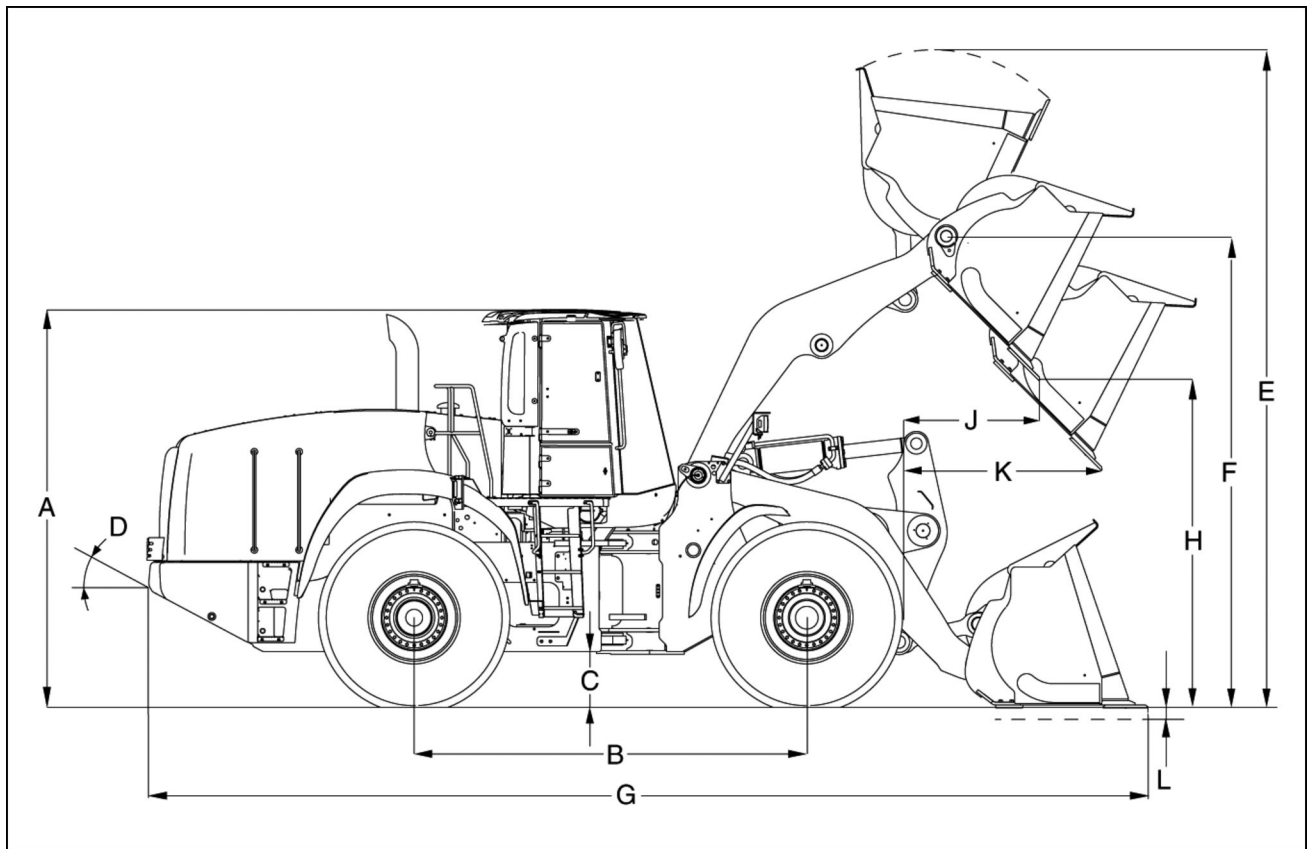
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1021F Z-Bar Specifications - 4.2 m³ (5.5 yd³) Bucket

	Bolt-on Edge Bucket	w/Teeth Bucket
ISO Bucket Specifications		
Struck	3.63 m³ (4.75 yd³)	3.49 m³ (4.56 yd³)
Heaped	4.20 m³ (5.49 yd³)	4.06 m³ (5.31 yd³)
Bucket width (maximum outer)	3195 mm (125.8 in)	3195 mm (125.8 in)
Dimensional Outline Specifications		
A (top of cab height)	3573 mm (140.6 in)	3573 mm (140.6 in)
B (wheelbase)	3550 mm (139.8 in)	3550 mm (139.8 in)
C (ground clearance)	509.4 mm (20.1 in)	509.4 mm (20.1 in)
D (rear angle of departure)	34 °	34 °
Overall width with bucket guard	2990 mm (117.7 in)	2990 mm (117.7 in)
Centerline tread width	2250 mm (88.6 in)	2250 mm (88.6 in)
Turning radius (outside of tires)	6372 mm (250.9 in)	6372 mm (250.9 in)
Turning angle from center	40 °	40 °
Total turning angle	80 °	80 °
E (fully raised with spillguard)	5800 mm (228.4 in)	5800 mm (228.4 in)
F (hinge pin - fully raised)	4243 mm (167.0 in)	4243 mm (167.0 in)
G (overall - bucket level on ground)	8892 mm (350.1 in)	9073 mm (357.2 in)
H (dump - fully raised, 45 ° dump)	3075 mm (121.1 in)	2959 mm (116.5 in)
J (reach - fully raised, 45 ° dump)	1265 mm (49.8 in)	1404 mm (55.3 in)
K (reach - 2.13 m (7.0 ft), 45 ° dump)	1887 mm (74.3 in)	1974 mm (77.7 in)
L (dig depth)	126 mm (5.0 in)	126 mm (5.0 in)
ISO Load Specifications		
Operating load	7938 kg (17500 lb)	8001 kg (17639 lb)
Tipping load		
Machine straight	19046 kg (41989 lb)	19193 kg (42313 lb)
40° turn	15878 kg (35001 lb)	16002 kg (35278 lb)

NOTE: *Refer to country regulation foreseen for exceptional vehicles*

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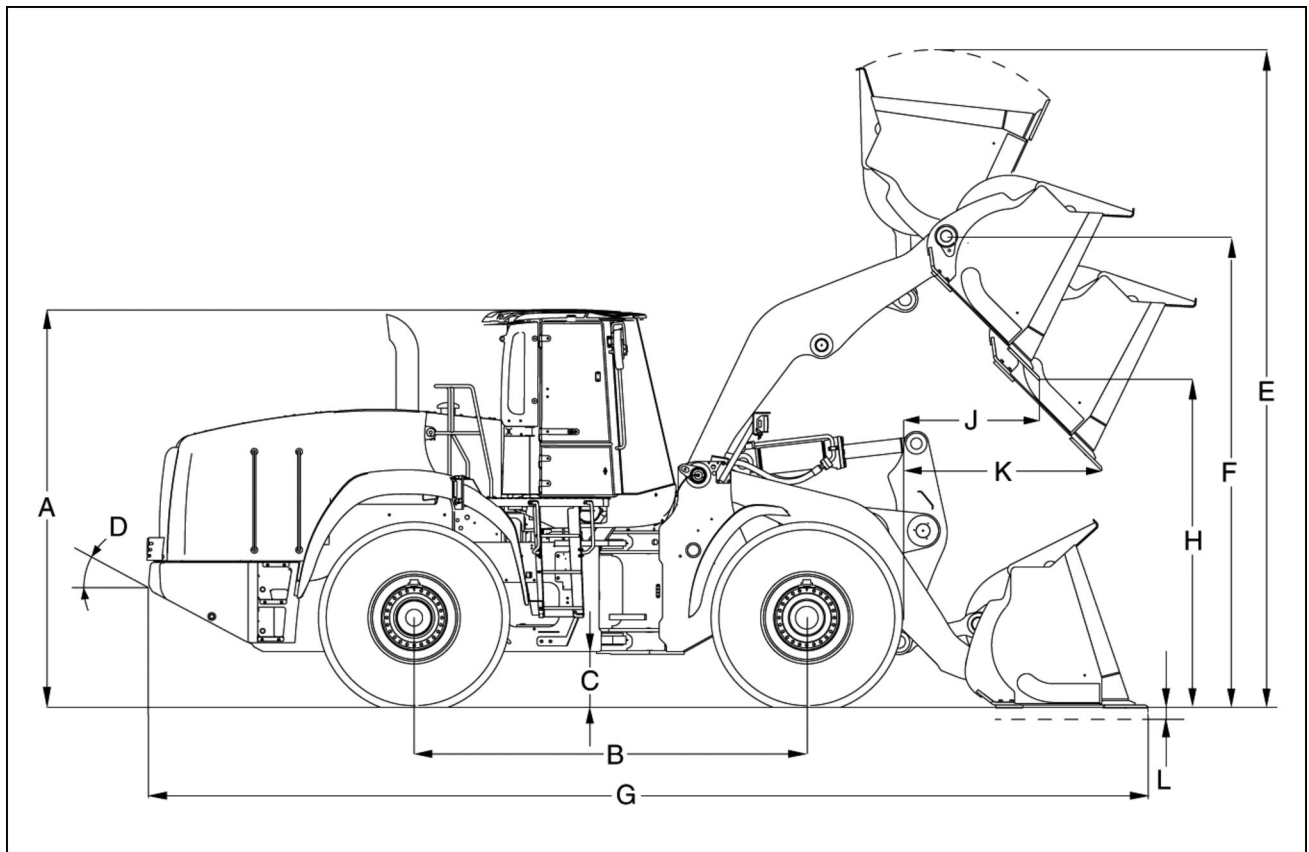
1021F Z-Bar Specifications - 4.4 m³ (5.75 yd³) Bucket Flat Bottom with Blade

Bolt-on Edge Bucket

ISO Bucket Specifications	
Struck	3.80 m ³ (4.97 yd ³)
Heaped	4.40 m ³ (5.75 yd ³)
Bucket width (maximum outer)	2980 mm (117.3 in)
Dimensional Outline Specifications	
A (top of cab height)	3573 mm (140.6 in)
B (wheelbase)	3550 mm (139.8 in)
C (ground clearance)	509.4 mm (20.1 in)
D (rear angle of departure)	34 °
Overall width with bucket guard	2990 mm (117.7 in)
Centerline tread width	2250 mm (88.6 in)
Turning radius (outside of tires)	6372 mm (250.9 in)
Turning angle from center	40 °
Total turning angle	80 °
E (fully raised with spillguard)	5942 mm (233.9 in)
F (hinge pin - fully raised)	4253 mm (167 in)
G (overall - bucket level on ground)	8979 mm (353.5 in)
H (dump - fully raised, 45 ° dump)	3019 mm (118.9 in)
J (reach - fully raised, 45 ° dump)	1332 mm (52.5 in)
K (reach - 2.13 m (7.0 ft), 45 ° dump)	1930 mm (76 in)
L (dig depth)	126 mm (5 in)
ISO Load Specifications	
Operating load	7841 kg (17286 lb)
Tipping load	18857 kg (41572 lb)
Machine straight	15682 kg (34572 lb)
40° turn	

NOTE: *Refer to country regulation foreseen for exceptional vehicles*

8 - SPECIFICATIONS



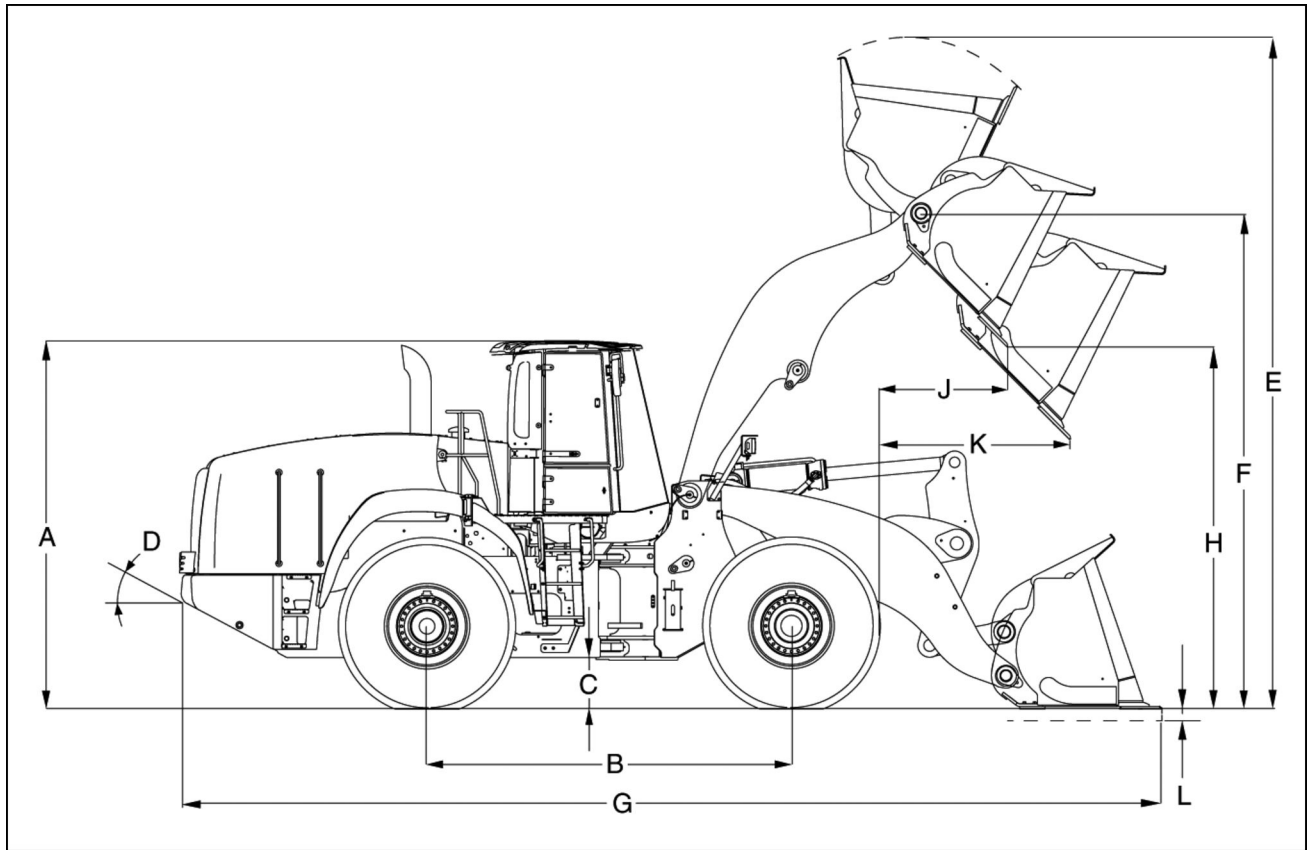
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1021F Z-Bar Specifications - 4.4 m³ (5.75 yd³) Bucket Flat Bottom with Teeth

	w/Teeth Bucket
ISO Bucket Specifications	
Struck	3.65 m ³ (4.77 yd ³)
Heaped	4.23 m ³ (5.53 yd ³)
Bucket width (maximum outer)	2980 mm (117.3 in)
Dimensional Outline Specifications	
A (top of cab height)	3573 mm (140.6 in)
B (wheelbase)	3550 mm (139.8 in)
C (ground clearance)	509.4 mm (20.1 in)
D (rear angle of departure)	34 °
Overall width with bucket guard	2990 mm (117.7 in)
Centerline tread width	2250 mm (88.6 in)
Turning radius (outside of tires)	6372 mm (250.9 in)
Turning angle from center	40 °
Total turning angle	80 °
E (fully raised with spillguard)	2339 mm (5942 in)
F (hinge pin - fully raised)	4243 mm (167.1 in)
G (overall - bucket level on ground)	9133 mm (359.6 in)
H (dump - fully raised, 45 ° dump)	2920 mm (115 in)
J (reach - fully raised, 45 ° dump)	1450 mm (57.1 in)
K (reach - 2.13 m (7.0 ft), 45 ° dump)	2001 mm (78.8 in)
L (dig depth)	126 mm (5.0 in)
ISO Load Specifications	
Operating load	8009 kg (17657 lb)
Tipping load	
Machine straight	19219 kg (42370 lb)
40° turn	16018 kg (35315 lb)

NOTE: *Refer to country regulation foreseen for exceptional vehicles*

8 - SPECIFICATIONS



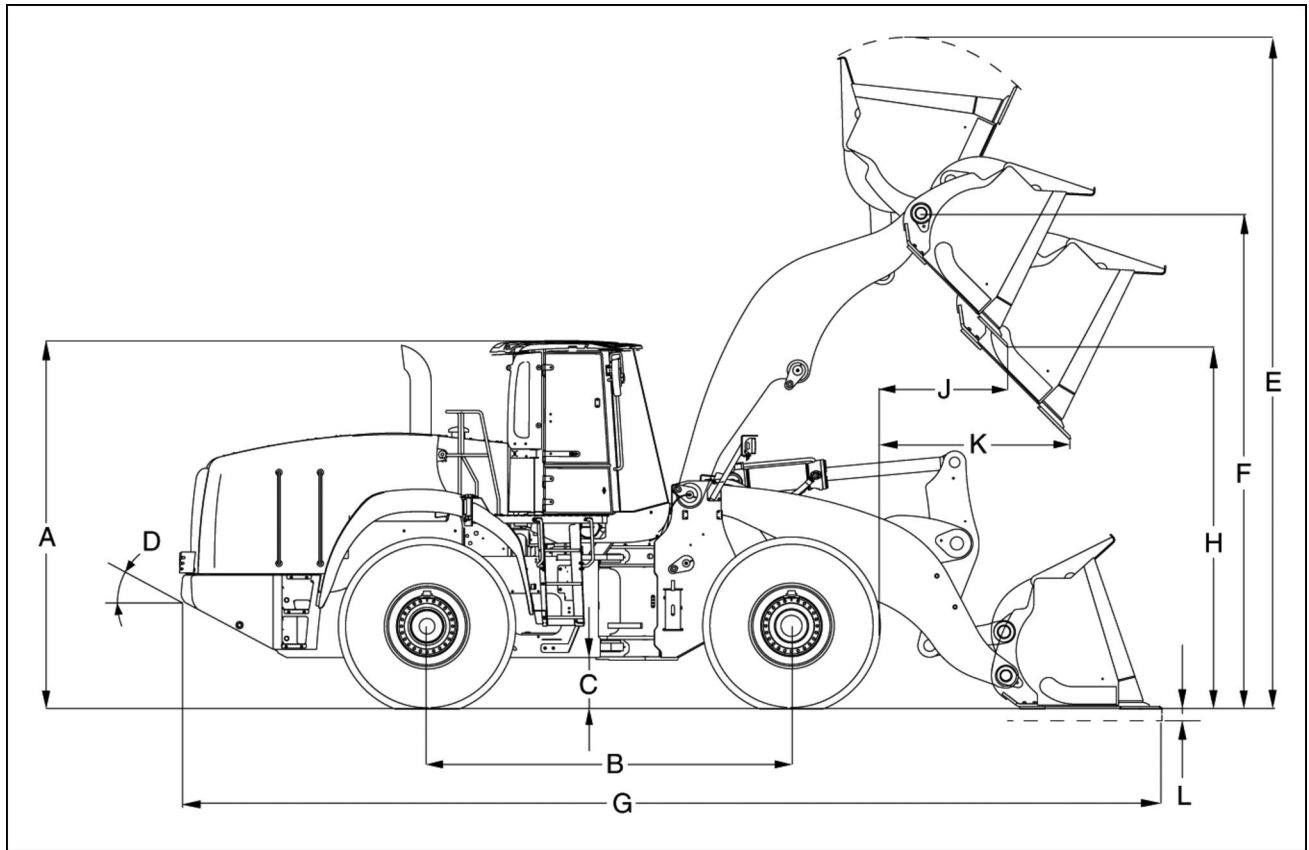
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1021F XR Specifications - 3.6 m³ (4.75 yd³) Bucket

	Bolt-on Edge Bucket	w/Teeth Bucket
ISO Bucket Specifications		
Struck	3.11 m ³ (4.07 yd ³)	2.96 m ³ (3.87 yd ³)
Heaped	3.63 m ³ (4.75 yd ³)	3.49 m ³ (4.56 yd ³)
Bucket width (maximum outer)	3195 mm (1258 in)	3195 mm (125.8 in)
Dimensional Outline Specifications		
A (top of cab height)	3573 mm (140.6 in)	3573 mm (140.6 in)
B (wheelbase)	3550 mm (139.8 in)	3550 mm (139.8 in)
C (ground clearance)	509.4 mm (20.1 in)	509.4 mm (20.1 in)
D (rear angle of departure)	34 °	34 °
Overall width with bucket guard	2990 mm (117.7 in)	2990 mm (117.7 in)
Centerline tread width	2250 mm (88.6 in)	2250 mm (88.6 in)
Turning radius (outside of tires)	6372 mm (250.9 in)	6372 mm (250.9 in)
Turning angle from center	40 °	40 °
Total turning angle	80 °	80 °
E (fully raised with spillguard)	6258 mm (246.4 in)	6258 mm (246.4 in)
F (hinge pin - fully raised)	4825 mm (190 in)	4825 mm (190 in)
G (overall - bucket level on ground)	9292 mm (365.8 in)	9473 mm (372.9 in)
H (dump - fully raised, 45 ° dump)	3733 mm (147 in)	3617 mm (142.4 in)
J (reach - fully raised, 45 ° dump)	1187 mm (46.7 in)	1326 mm (52.2 in)
K (reach - 2.13 m (7.0 ft), 45 ° dump)	2294 mm (90.3 in)	2391 mm (94.1 in)
L (dig depth)	129 mm (5.1 in)	129 mm (5.1 in)
ISO Load Specifications		
Operating load	6817 kg (15028 lb)	6868 kg (15142 lb)
Tipping load		
Machine straight	16369 kg (36087 lb)	16492 kg (36358 lb)
40° turn	13633 kg (30057 lb)	13737 kg (30285 lb)

NOTE: *Refer to country regulation foreseen for exceptional vehicles*

8 - SPECIFICATIONS



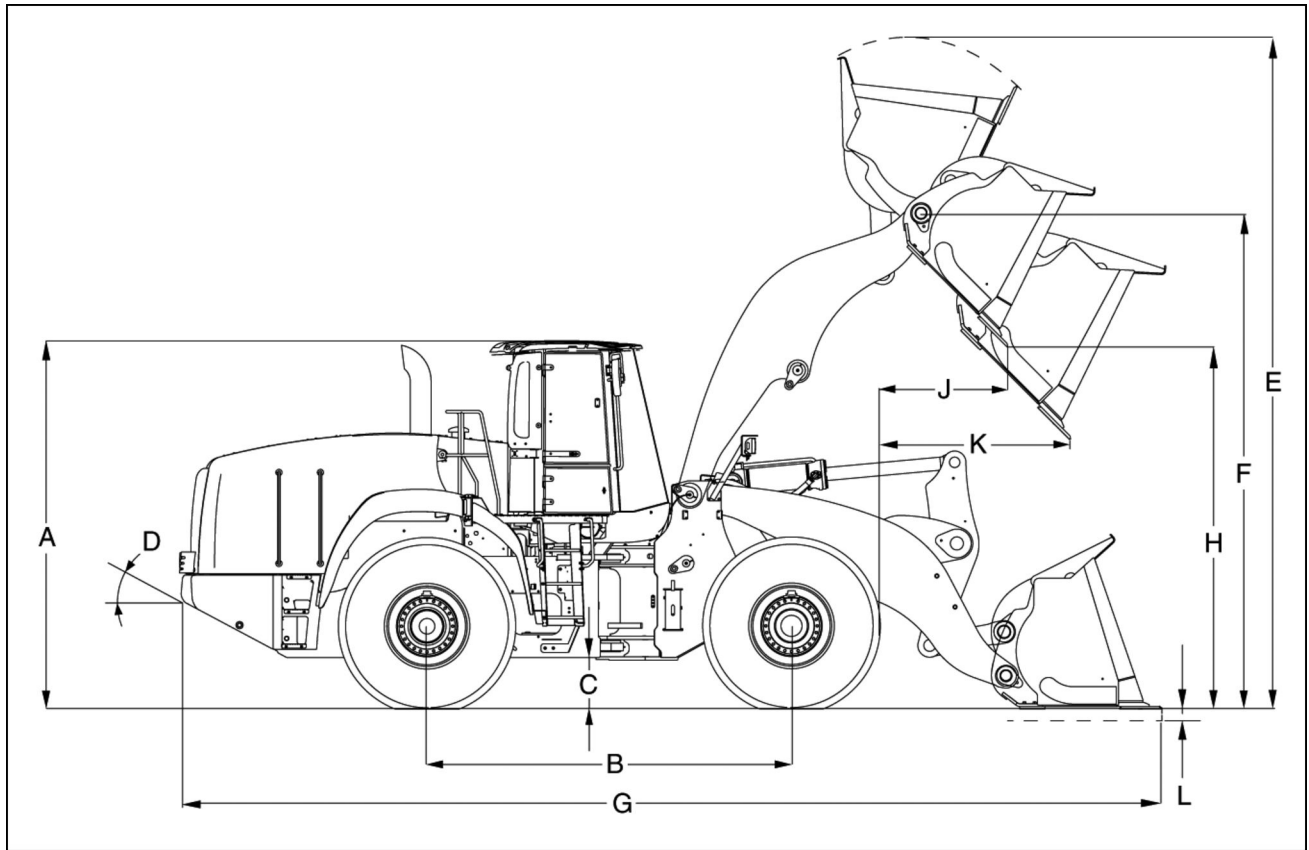
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1021F XR Specifications - 4.2 m³ (5.5 yd³) Bucket

	Bolt-on Edge Bucket	w/Teeth Bucket
ISO Bucket Specifications		
Struck	3.63 m³ (4.75 yd³)	3.49 m³ (4.56 yd³)
Heaped	4.20 m³ (5.49 yd³)	4.06 m³ (5.31 yd³)
Bucket width (maximum outer)	3195 mm (125.8 in)	3195 mm (125.8 in)
Dimensional Outline Specifications		
A (top of cab height)	3573 mm (140.6 in)	3573 mm (140.6 in)
B (wheelbase)	3550 mm (139.8 in)	3550 mm (139.8 in)
C (ground clearance)	509.4 mm (20.1 in)	509.4 mm (20.1 in)
D (rear angle of departure)	34 °	34 °
Overall width with bucket guard	2990 mm (117.7 in)	2990 mm (117.7 in)
Centerline tread width	2250 mm (88.6 in)	2250 mm (88.6 in)
Turning radius (outside of tires)	6372 mm (250.9 in)	6372 mm (250.9 in)
Turning angle from center	40 °	40 °
Total turning angle	80 °	80 °
E (fully raised with spillguard)	6382 mm (251.3 in)	6382 mm (251.3 in)
F (hinge pin - fully raised)	693 mm (27.3 in)	693 mm (27.3 in)
G (overall - bucket level on ground)	9410 mm (370.5 in)	9591 mm (377.6 in)
H (dump - fully raised, 45 ° dump)	3657 mm (144 in)	3541 mm (139.4 in)
J (reach - fully raised, 45 ° dump)	1278 mm (50.3 in)	1416 mm (55.8 in)
K (reach - 2.13 m (7.0 ft) , 45 ° dump)	2357 mm (92.8 in)	2451 mm (96.5 in)
L (dig depth)	129 mm (5.1 in)	129 mm (5.1 in)
ISO Load Specifications		
Operating load	6727 kg (14831 lb)	6778 kg (14942 lb)
Tipping load		
Machine straight	16178 kg (3566 lb)	16298 kg (35930 lb)
40° turn	13454 kg (29662 lb)	13556 kg (29885 lb)

NOTE: *Refer to country regulation foreseen for exceptional vehicles*

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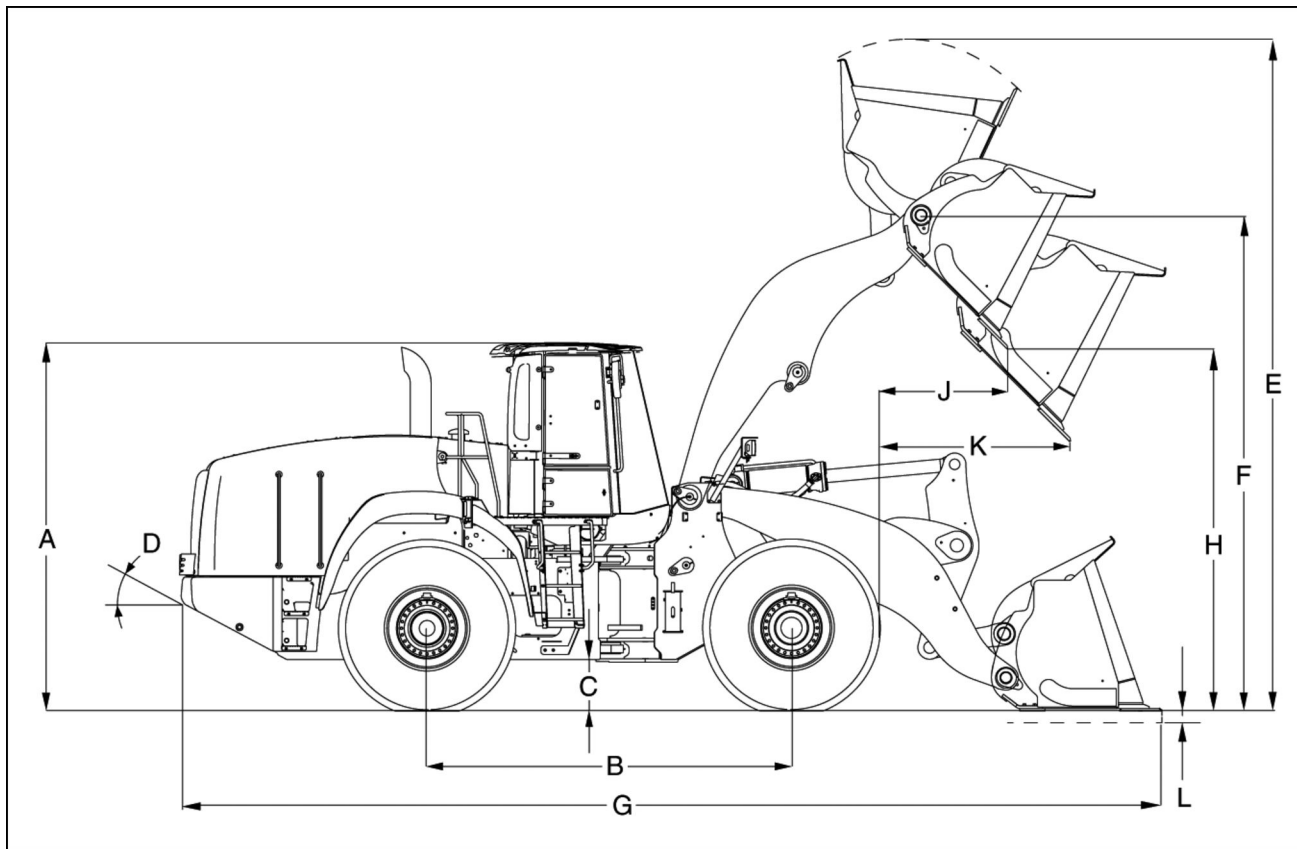
1021F XR Specifications - 4.4 m³ (5.75 yd³) Bucket Flat Bottom with Blade

Bolt-on Edge Bucket

ISO Bucket Specifications	
Struck	3.80 m ³ (4.97 yd ³)
Heaped	4.40 m ³ (5.75 yd ³)
Bucket width (maximum outer)	2980 mm (1173 in)
Dimensional Outline Specifications	
A (top of cab height)	3573 mm (140.6 in)
B (wheelbase)	3550 mm (139.8 in)
C (ground clearance)	509.4 mm (20.1 in)
D (rear angle of departure)	34 °
Overall width with bucket guard	2990 mm (117.7 in)
Centerline tread width	2250 mm (88.6 in)
Turning radius (outside of tires)	6372 mm (250.9 in)
Turning angle from center	40 °
Total turning angle	80 °
E (fully raised with spillguard)	6523 mm (256.8 in)
F (hinge pin - fully raised)	4824 mm (189.9 in)
G (overall - bucket level on ground)	9498 mm (373.9 in)
H (dump - fully raised, 45 ° dump)	3600 mm (141.7 in)
J (reach - fully raised, 45 ° dump)	1345 mm (52.9 in)
K (reach - 2.13 m (7.0 ft), 45 ° dump)	2403 mm (94.6 in)
L (dig depth)	129 mm (5.1 in)
ISO Load Specifications	
Operating load	6615 kg (14583 lb)
Tipping load	
Machine straight	15943 kg (35149 lb)
40° turn	13229 kg (29165 lb)

NOTE: *Refer to country regulation foreseen for exceptional vehicles*

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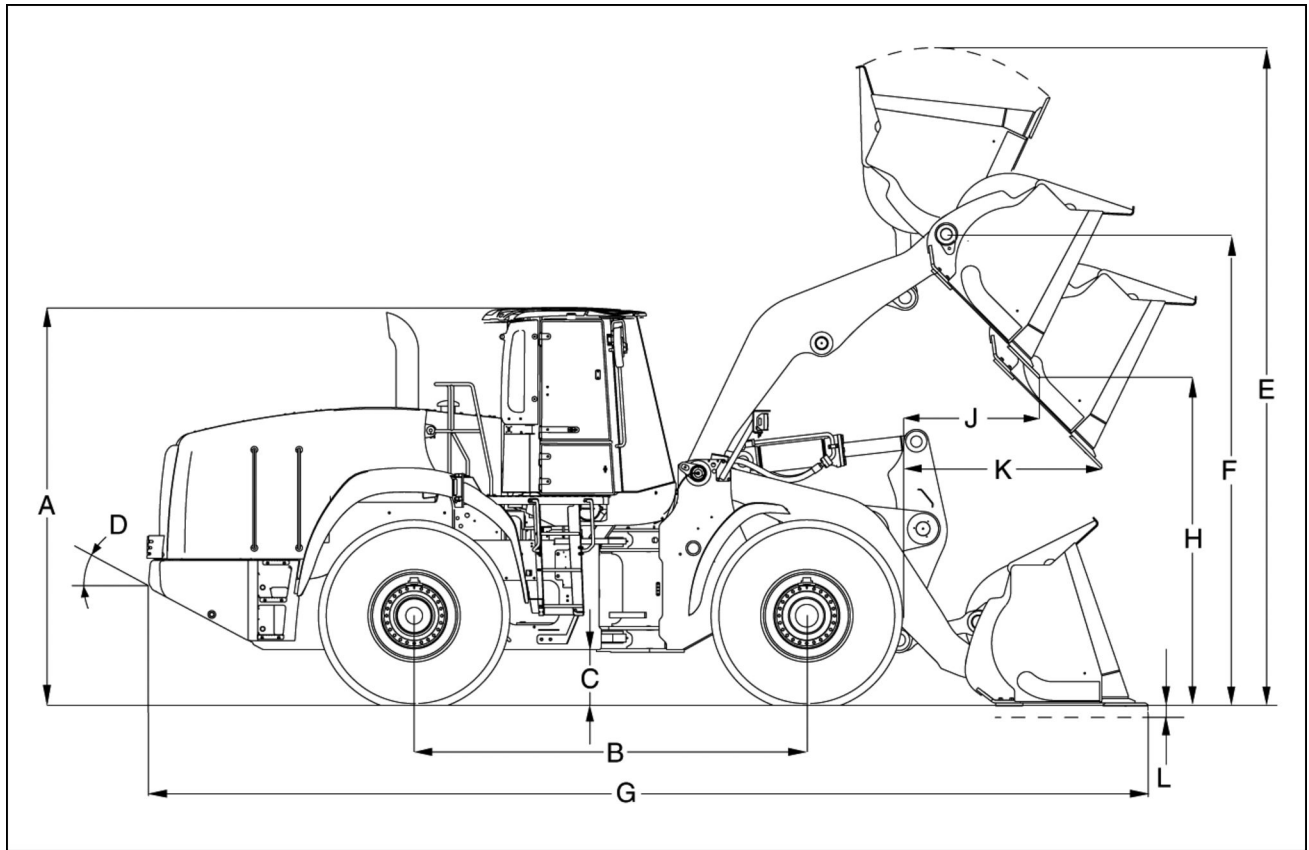
1021F XR Specifications - 4.4 m³ (5.75 yd³) Bucket Flat Bottom with Teeth

	w/Teeth Bucket
ISO Bucket Specifications	
Struck	3.65 m³ (4.77 yd³)
Heaped	4.23 m³ (5.53 yd³)
Bucket width (maximum outer)	2980 mm (117.3 in)
Dimensional Outline Specifications	
A (top of cab height)	3573 mm (140.6 in)
B (wheelbase)	3550 mm (139.8 in)
C (ground clearance)	509.4 mm (20.1 in)
D (rear angle of departure)	34 °
Overall width with bucket guard	2990 mm (117.7 in)
Centerline tread width	2250 mm (88.6 in)
Turning radius (outside of tires)	6372 mm (250.9 in)
Turning angle from center	40 °
Total turning angle	80 °
E (fully raised with spillguard)	6524 mm (256.8 in)
F (hinge pin - fully raised)	4825 mm (190 in)
G (overall - bucket level on ground)	9651 mm (380 in)
H (dump - fully raised, 45 ° dump)	3502 mm (137.9 in)
J (reach - fully raised, 45 ° dump)	1462 mm (57.6 in)
K (reach - 2.13 m (7.0 ft) , 45 ° dump)	2481 mm (97.7 in)
L (dig depth)	129 mm (5.1 in)
ISO Load Specifications	
Operating load	6765 kg (14914 lb)
Tipping load	
Machine straight	16267 kg (35862 lb)
40° turn	13530 kg (29829 lb)

NOTE: *Refer to country regulation foreseen for exceptional vehicles*

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1121F Loader - Lift Arms Specifications



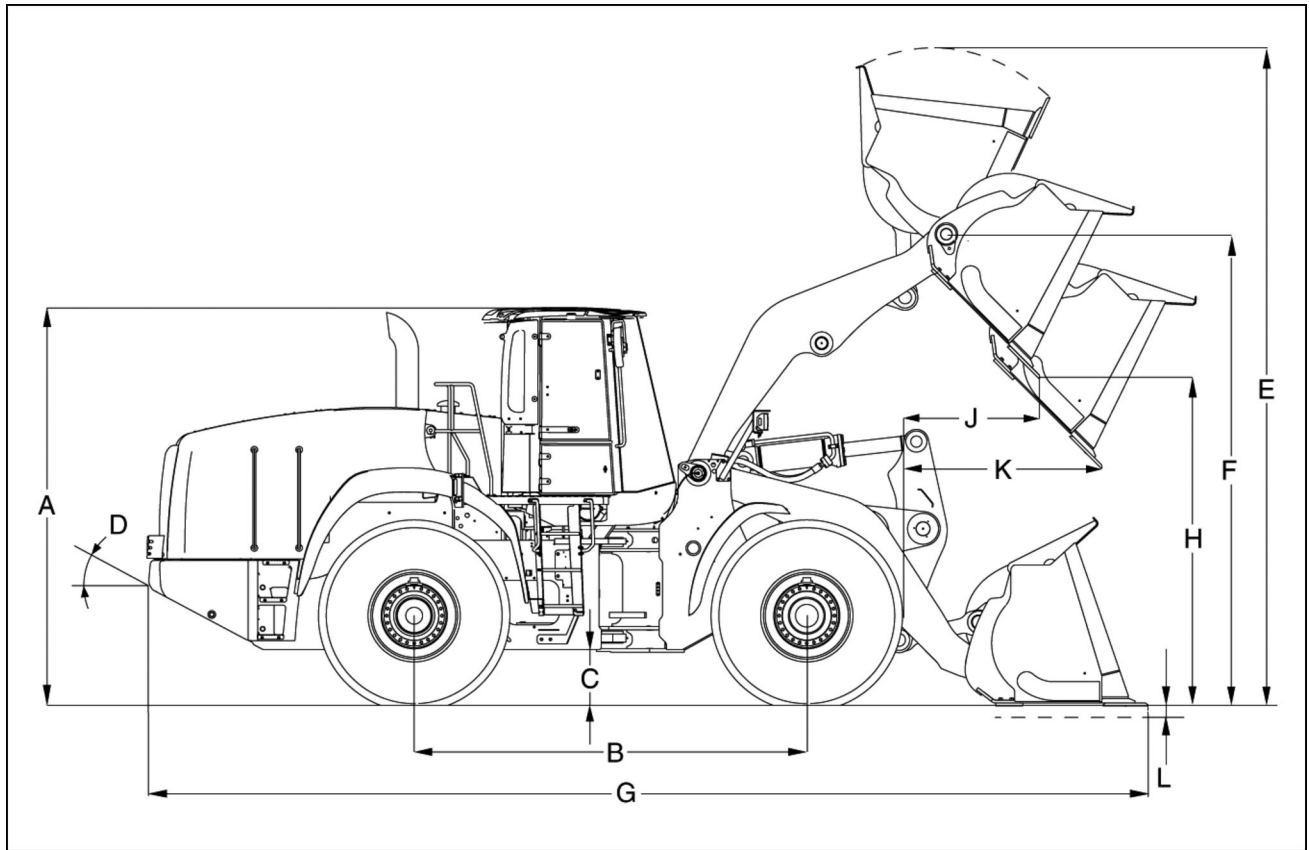
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1121F Z-Bar Specifications - 4.0 m³ (5.2 yd³) Bucket

	Bolt-on Edge Bucket	w/Teeth Bucket
ISO Bucket Specifications		
Struck	3.46 m ³ (4.53 yd ³)	3.31 m ³ (4.33 yd ³)
Heaped	4.01 m ³ (5.24 yd ³)	3.87 m ³ (5.06 yd ³)
Bucket width (maximum outer)	3195 mm (125.8 in)	3195 mm (125.8 in)
Dimensional Outline Specifications		
A (top of cab height)	3573 mm (140.6 in)	3573 mm (140.6 in)
B (wheelbase)	3550 mm (139.8 in)	3550 mm (139.8 in)
C (ground clearance)	509.4 mm (20.1 in)	509.4 mm (20.1 in)
D (rear angle of departure)	34 °	34 °
Overall width with bucket guard	2990 mm (117.7 in)	2990 mm (117.7 in)
Centerline tread width	2250 mm (88.6 in)	2250 mm (88.6 in)
Turning radius (outside of tires)	6372 mm (250.9 in)	6372 mm (250.9 in)
Turning angle from center	40 °	40 °
Total turning angle	80 °	80 °
E (fully raised with spillguard)	5960 mm (234.6 in)	5960 mm (234.6 in)
F (hinge pin - fully raised)	4443 mm (174.9 in)	4443 mm (174.9 in)
G (overall - bucket level on ground)	8967 mm (353 in)	9148 mm (360.2 in)
H (dump - fully raised, 45 ° dump)	3299 mm (129.9 in)	3183 mm (125.3 in)
J (reach - fully raised, 45 ° dump)	1157 mm (45.5 in)	1296 mm (51.0 in)
K (reach - 2.13 m (7.0 ft), 45 ° dump)	1965 mm (77.4 in)	2054 mm (80.9 in)
L (dig depth)	118 mm (4.6 in)	118 mm (4.6 in)
ISO Load Specifications		
Operating load	8961 kg (19756 lb)	9031 kg (19910 lb)
Tipping load		
Machine straight	21150 kg (46627 lb)	21310 kg (46980 lb)
40° turn	17923 kg (39512 lb)	18062 kg (39820 lb)

NOTE: *Refer to country regulation foreseen for exceptional vehicles*

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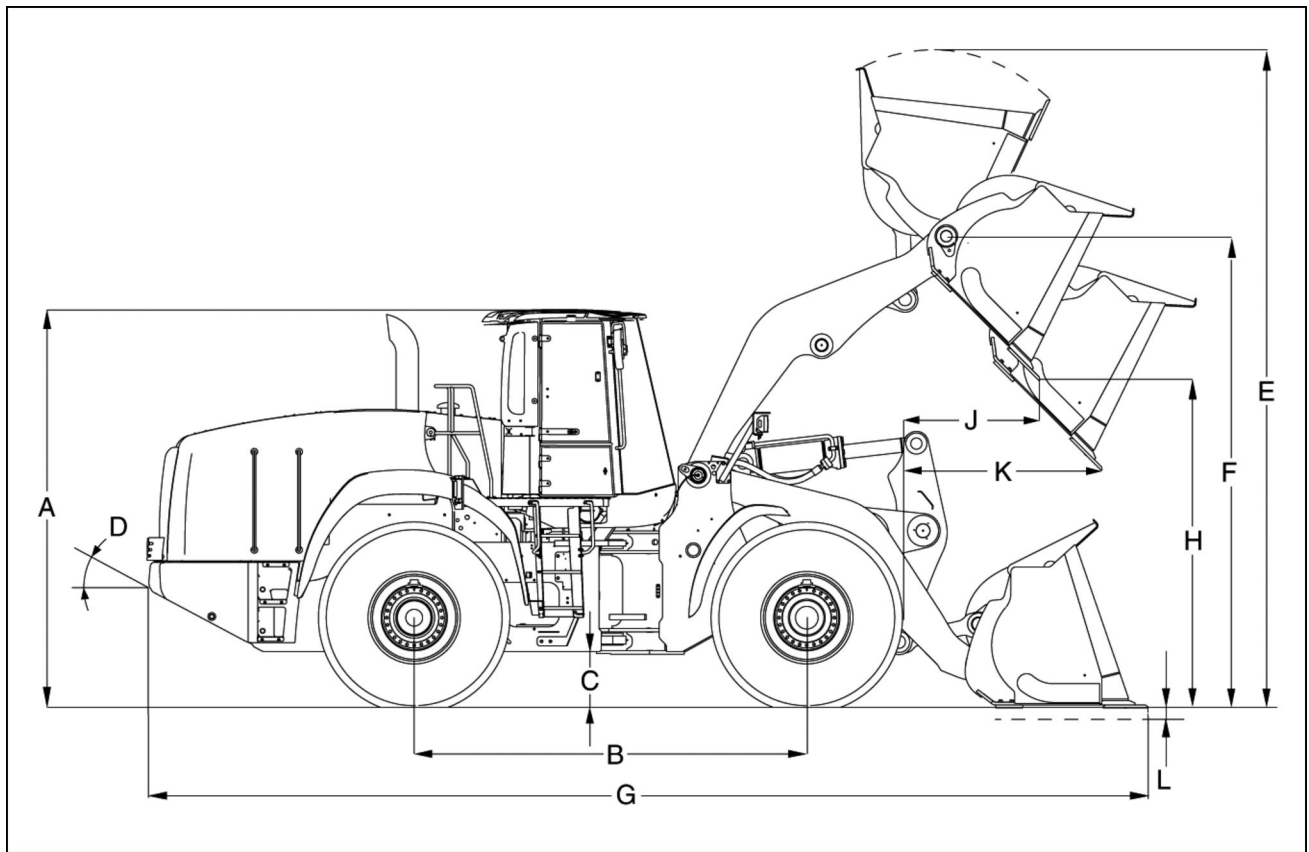
LEEN11T0119FA_1 10

1121F Z-Bar Specifications - 4.8 m³ (6.27 yd³) Bucket

	Bolt-on Edge Bucket	w/Teeth Bucket
ISO Bucket Specifications		
Struck	4.17 m ³ (5.45 yd ³)	4.01 m ³ (5.25 yd ³)
Heaped	4.78 m ³ (6.25 yd ³)	4.63 m ³ (6.06 yd ³)
Bucket width (maximum outer)	3195 mm (125.8 in)	3195 mm (125.8 in)
Dimensional Outline Specifications		
A (top of cab height)	3573 mm (140.6 in)	3573 mm (140.6 in)
B (wheelbase)	3550 mm (139.8 in)	3550 mm (139.8 in)
C (ground clearance)	509.4 mm (20.1 in)	509.4 mm (20.1 in)
D (rear angle of departure)	34 °	34 °
Overall width with bucket guard	2990 mm (117.7 in)	2990 mm (117.7 in)
Centerline tread width	2250 mm (88.6 in)	2250 mm (88.6 in)
Turning radius (outside of tires)	6372 mm (250.9 in)	6372 mm (250.9 in)
Turning angle from center	40 °	40 °
Total turning angle	80 °	80 °
E (fully raised with spillguard)	6120 mm (240.9 in)	6120 mm (240.9 in)
F (hinge pin - fully raised)	4442 mm (174.9 in)	4442 mm (174.9 in)
G (overall - bucket level on ground)	9119 mm (359 in)	9300 mm (366.1 in)
H (dump - fully raised, 45 ° dump)	3201 mm (126 in)	3085 mm (121.5 in)
J (reach - fully raised, 45 ° dump)	1273 mm (50.1 in)	1412 mm (55.6 in)
K (reach - 2.13 m (7.0 ft), 45 ° dump)	2040 mm (80.3 in)	2124 mm (83.6 in)
L (dig depth)	118 mm (4.7 in)	118 mm (4.7 in)
ISO Load Specifications		
Operating load	8856 kg (19525 lb)	8921 kg (19668 lb)
Tipping load		
Machine straight	20949 kg (46184 lb)	21099 kg (46516 lb)
40° turn	17713 kg (39050 lb)	17843 kg (39336 lb)

NOTE: *Refer to country regulation foreseen for exceptional vehicles*

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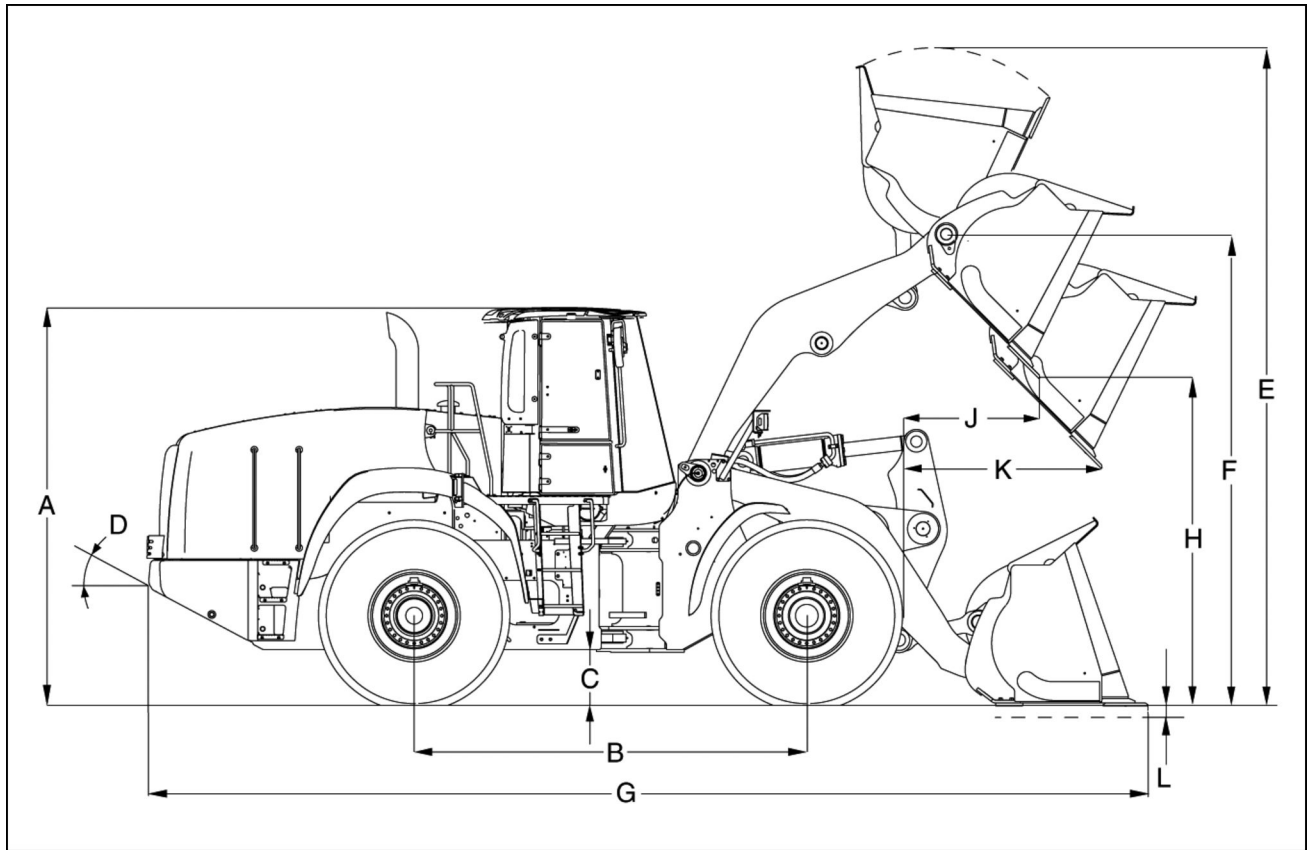
1121F Z-Bar Specifications - 5.0 m³ (6.53 yd³) Bucket Flat Bottom with Blade

Bolt-on Edge Bucket

ISO Bucket Specifications	
Struck	4.40 m ³ (5.75 yd ³)
Heaped	5.0 m ³ (6.54 yd ³)
Bucket width (maximum outer)	3175 mm (125 in)
Dimensional Outline Specifications	
A (top of cab height)	3573 mm (140.6 in)
B (wheelbase)	3550 mm (139.8 in)
C (ground clearance)	509.4 mm (20.1 in)
D (rear angle of departure)	34 °
Overall width with bucket guard	2990 mm (117.7 in)
Centerline tread width	2250 mm (88.6 in)
Turning radius (outside of tires)	6372 mm (250.9 in)
Turning angle from center	40 °
Total turning angle	80 °
E (fully raised with spillguard)	6199 mm (244 in)
F (hinge pin - fully raised)	4442 mm (174.9 in)
G (overall - bucket level on ground)	9289 mm (365.7 in)
H (dump - fully raised, 45 ° dump)	3092 mm (121.7 in)
J (reach - fully raised, 45 ° dump)	1403 mm (52.2 in)
K (reach - 2.13 m (7.0 ft), 45 ° dump)	2119 mm (83.4 in)
L (dig depth)	119 mm (4.7 in)
ISO Load Specifications	
Operating load	8748 kg (19285 lb)
Tipping load	
Machine straight	20735 kg (47714 lb)
40° turn	17495 kg (38571 lb)

NOTE: *Refer to country regulation foreseen for exceptional vehicles*

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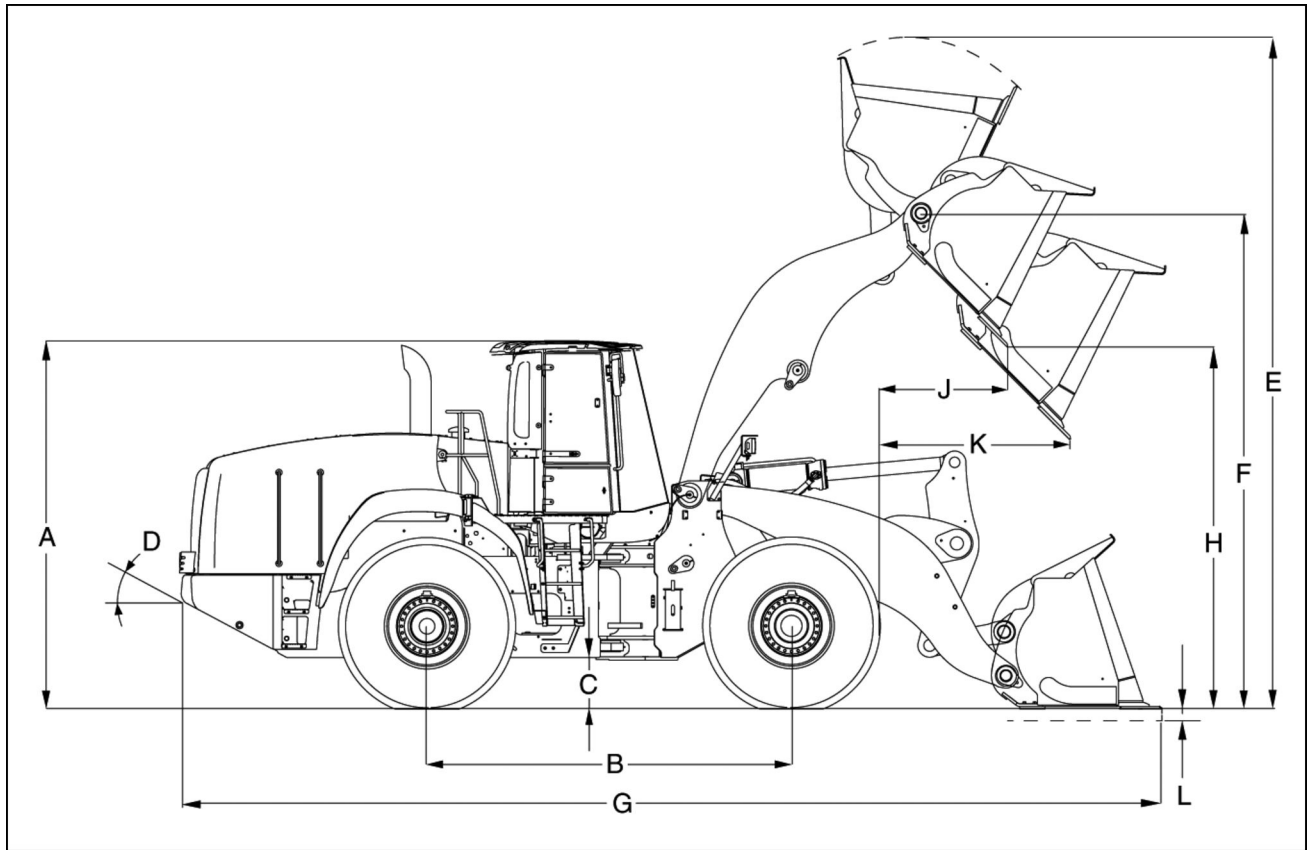
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1121F Z-Bar Specifications - 4.8 m³ (6.27 yd³) Bucket Flat Bottom with Teeth

	w/Teeth Bucket
ISO Bucket Specifications	
Struck	4.01 m ³ (5.25 yd ³)
Heaped	4.63 m ³ (6.06 yd ³)
Bucket width (maximum outer)	3195 mm (125.8 in)
Dimensional Outline Specifications	
A (top of cab height)	3573 mm (140.6 in)
B (wheelbase)	3550 mm (139.8 in)
C (ground clearance)	509.4 mm (20.1 in)
D (rear angle of departure)	34 °
Overall width with bucket guard	2990 mm (117.7 in)
Centerline tread width	2250 mm (88.6 in)
Turning radius (outside of tires)	6372 mm (250.9 in)
Turning angle from center	40 °
Total turning angle	80 °
E (fully raised with spillguard)	6120 mm (240.9 in)
F (hinge pin - fully raised)	4442 mm (174.9 in)
G (overall - bucket level on ground)	9300 mm (366.1 in)
H (dump - fully raised, 45 ° dump)	3085 mm (121.5 in)
J (reach - fully raised, 45 ° dump)	1412 mm (55.6 in)
K (reach - 2.13 m (7.0 ft), 45 ° dump)	2124 mm (83.6 in)
L (dig depth)	118 mm (4.7 in)
ISO Load Specifications	
Operating load	8921 kg (19668 lb)
Tipping load	
Machine straight	21099 kg (46516 lb)
40° turn	17843 kg (39336 lb)

NOTE: *Refer to country regulation foreseen for exceptional vehicles*

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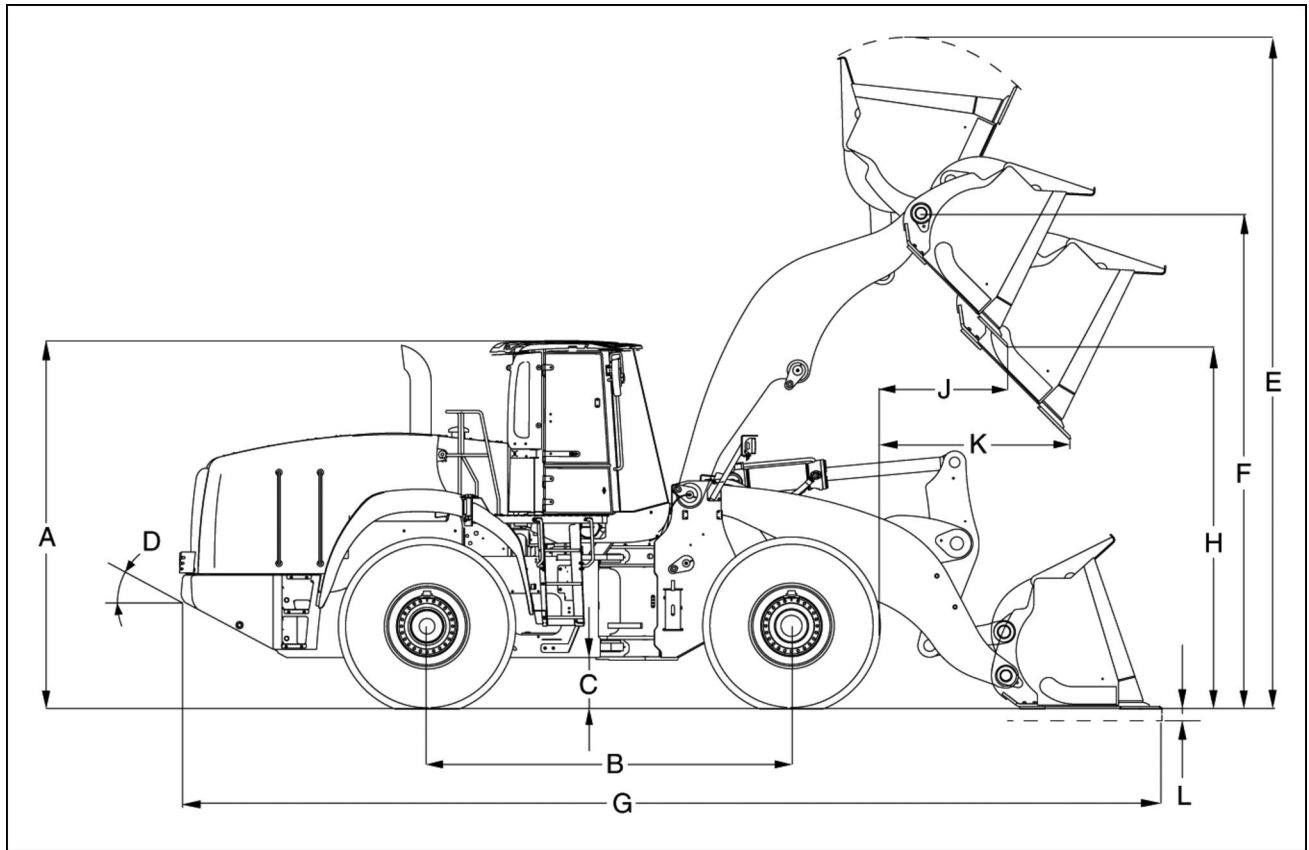
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1121F XR Specifications - 4.0 m³ (5.2 yd³) Bucket

	Bolt-on Edge Bucket	w/Teeth Bucket
ISO Bucket Specifications		
Struck	4.46 m ³ (4.53 yd ³)	3.31 m ³ (4.33 yd ³)
Heaped	4.01 m ³ (5.24 yd ³)	3.87 m ³ (5.06 yd ³)
Bucket width (maximum outer)	3195 mm (125.8 in)	3195 mm (125.8 in)
Dimensional Outline Specifications		
A (top of cab height)	3573 mm (140.6 in)	3573 mm (140.6 in)
B (wheelbase)	3550 mm (139.8 in)	3550 mm (139.8 in)
C (ground clearance)	509.4 mm (20.1 in)	509.4 mm (20.1 in)
D (rear angle of departure)	34 °	34 °
Overall width with bucket guard	2990 mm (117.7 in)	2990 mm (117.7 in)
Centerline tread width	2250 mm (88.6 in)	2250 mm (88.6 in)
Turning radius (outside of tires)	6372 mm (250.9 in)	6372 mm (250.9 in)
Turning angle from center	40 °	40 °
Total turning angle	80 °	80 °
E (fully raised with spillguard)	6377 mm (251.1 in)	6377 mm (251.1 in)
F (hinge pin - fully raised)	4860 mm (191.3 in)	4860 mm (191.3 in)
G (overall - bucket level on ground)	9374 mm (369.1 in)	9555 mm (376.2 in)
H (dump - fully raised, 45 ° dump)	3717 mm (146.3 in)	3600 mm (141.7 in)
J (reach - fully raised, 45 ° dump)	1200 mm (47.2 in)	1338 mm (52.7 in)
K (reach - 2.13 m (7.0 ft), 45 ° dump)	2335 mm (91.9 in)	2430 mm (95.7 in)
L (dig depth)	118 mm (4.7 in)	118 mm (4.7 in)
ISO Load Specifications		
Operating load	7882 kg (17378 lb)	7941 kg (17506 lb)
Tipping load		
Machine straight	18596 kg (40997 lb)	18732 kg (41298 lb)
40° turn	15765 kg (34756 lb)	15881 kg (35012 lb)

NOTE: *Refer to country regulation foreseen for exceptional vehicles*

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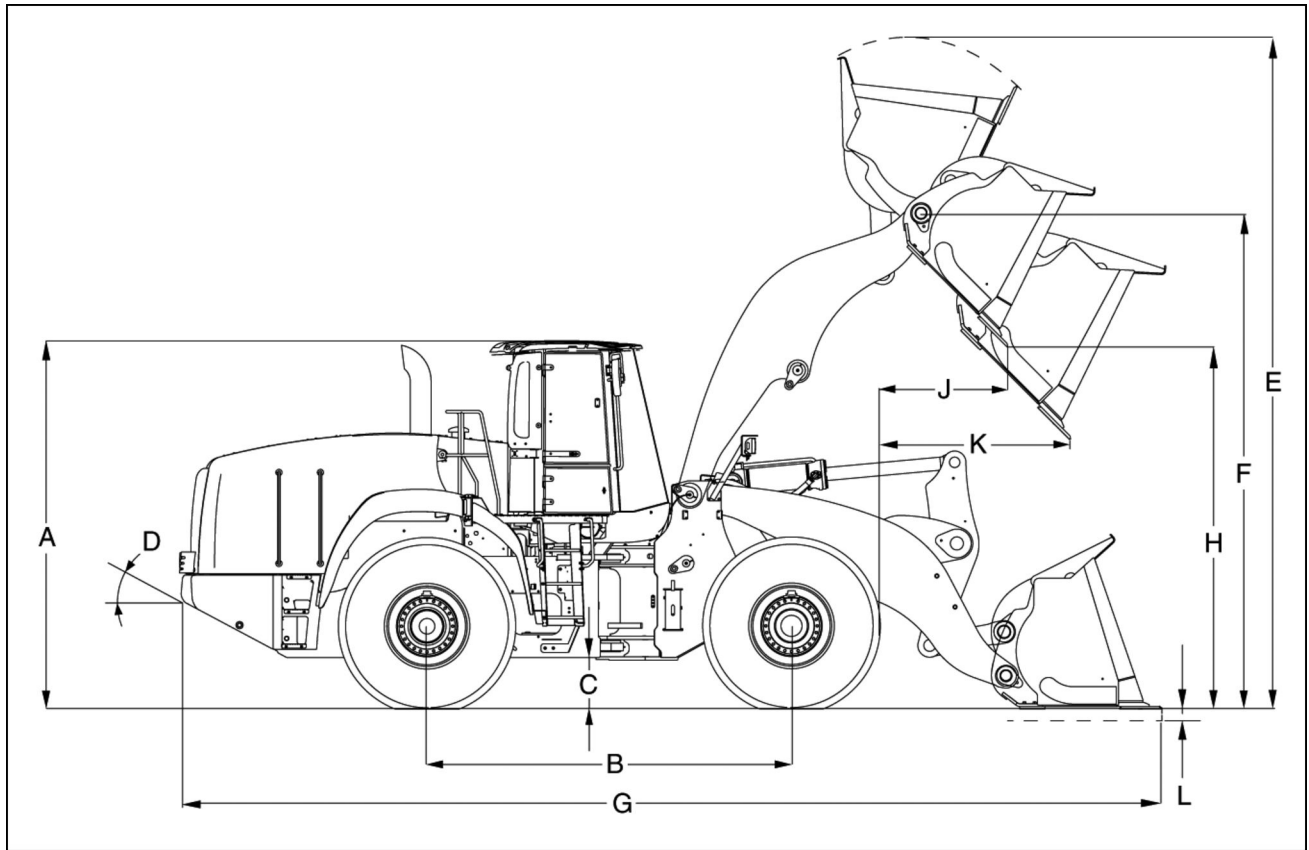
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1121F XR Specifications - 4.8 m³ (6.27 yd³) Bucket

	Bolt-on Edge Bucket	w/Teeth Bucket
ISO Bucket Specifications		
Struck	4.17 m ³ (5.45 yd ³)	4.01 m ³ (5.25 yd ³)
Heaped	4.78 m ³ (6.25 yd ³)	4.63 m ³ (6.06 yd ³)
Bucket width (maximum outer)	3195 mm (125.8 in)	3195 mm (125.8 in)
Dimensional Outline Specifications		
A (top of cab height)	3573 mm (140.6 in)	3573 mm (140.6 in)
B (wheelbase)	3550 mm (139.8 in)	3550 mm (139.8 in)
C (ground clearance)	509.4 mm (20.1 in)	509.4 mm (20.1 in)
D (rear angle of departure)	34 °	34 °
Overall width with bucket guard	2990 mm (117.7 in)	2990 mm (117.7 in)
Centerline tread width	2250 mm (88.6 in)	2250 mm (88.6 in)
Turning radius (outside of tires)	6372 mm (250.9 in)	6372 mm (250.9 in)
Turning angle from center	40 °	40 °
Total turning angle	80 °	80 °
E (fully raised with spillguard)	6537 mm (257.4 in)	6537 mm (257.4 in)
F (hinge pin - fully raised)	4860 mm (191.3 in)	4860 mm (191.3 in)
G (overall - bucket level on ground)	9526 mm (375 in)	9707 mm (382.2 in)
H (dump - fully raised, 45 ° dump)	3619 mm (142.5 in)	3503 mm (137.9 in)
J (reach - fully raised, 45 ° dump)	1316 mm (51.8 in)	1454 mm (57.3 in)
K (reach - 2.13 m (7.0 ft), 45 ° dump)	2415 mm (95.1 in)	2505 mm (98.6 in)
L (dig depth)	119 mm (4.7 in)	119 mm (4.7 in)
ISO Load Specifications		
Operating load	7753 kg (17092 lb)	7808 kg (17214 lb)
Tipping load		
Machine straight	18319 kg (40386 lb)	18449 kg (40673 lb)
40° turn	15506 kg (34185 lb)	15616 kg (34428 lb)

NOTE: *Refer to country regulation foreseen for exceptional vehicles*

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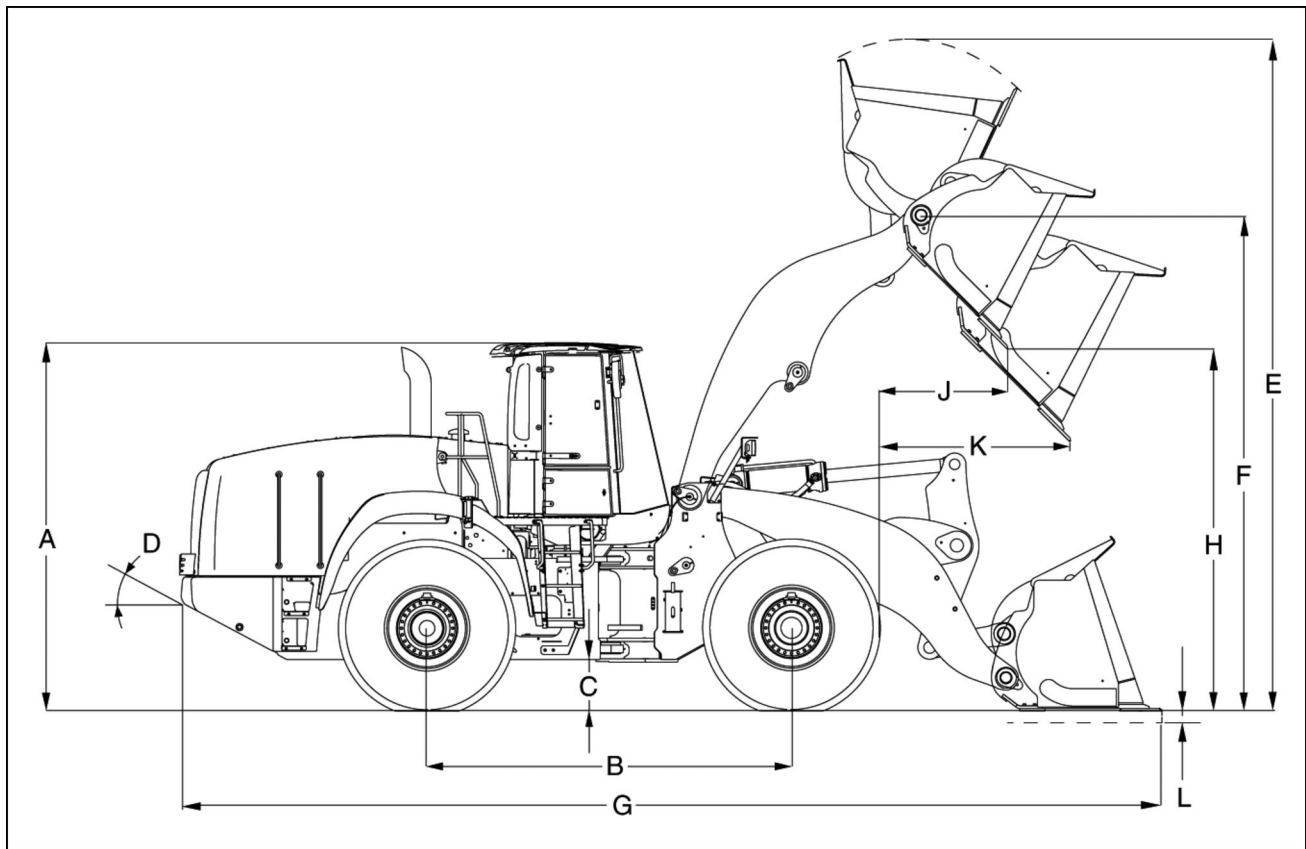
1121F XR Specifications - 5.0 m³ (6.53 yd³) Bucket Flat Bottom with Blade

Bolt-on Edge Bucket

ISO Bucket Specifications	
Struck	4.40 m ³ (5.75 yd ³)
Heaped	5.0 m ³ (6.54 yd ³)
Bucket width (maximum outer)	3175 mm (125 in)
Dimensional Outline Specifications	
A (top of cab height)	3573 mm (140.6 in)
B (wheelbase)	3550 mm (139.8 in)
C (ground clearance)	509.4 mm (20.1 in)
D (rear angle of departure)	34 °
Overall width with bucket guard	2990 mm (117.7 in)
Centerline tread width	2250 mm (88.6 in)
Turning radius (outside of tires)	6372 mm (250.9 in)
Turning angle from center	40 °
Total turning angle	80 °
E (fully raised with spillguard)	6616 mm (260.5 in)
F (hinge pin - fully raised)	4859 mm (191.3 in)
G (overall - bucket level on ground)	9696 mm (381.7 in)
H (dump - fully raised, 45 ° dump)	3509 mm (138.2 in)
J (reach - fully raised, 45 ° dump)	1446 mm (56.9 in)
K (reach - 2.13 m (7.0 ft), 45 ° dump)	2500 mm (98.4 in)
L (dig depth)	119 mm (4.7 in)
ISO Load Specifications	
Operating load	7643 kg (16850 lb)
Tipping load	
Machine straight	18100 kg (39903 lb)
40° turn	15286 kg (33700 lb)

NOTE: *Refer to country regulation foreseen for exceptional vehicles*

8 - SPECIFICATIONS



LEEN11T0120FA 16

1121F XR Specifications - 4.8 m³ (6.27 yd³) Bucket Flat Bottom with Teeth

	w/Teeth Bucket
ISO Bucket Specifications	
Struck	4.01 m³ (5.25 yd³)
Heaped	4.63 m³ (6.06 yd³)
Bucket width (maximum outer)	3195 mm (125.8 in)
Dimensional Outline Specifications	
A (top of cab height)	3573 mm (140.6 in)
B (wheelbase)	3550 mm (139.8 in)
C (ground clearance)	509.4 mm (20.1 in)
D (rear angle of departure)	34 °
Overall width with bucket guard	2990 mm (117.7 in)
Centerline tread width	2250 mm (88.6 in)
Turning radius (outside of tires)	6372 mm (250.9 in)
Turning angle from center	40 °
Total turning angle	80 °
E (fully raised with spillguard)	6616 mm (2605 in)
F (hinge pin - fully raised)	4859 mm (191.3 in)
G (overall - bucket level on ground)	9696 mm (381.7 in)
H (dump - fully raised, 45 ° dump)	3510 mm (138.2 in)
J (reach - fully raised, 45 ° dump)	1146 mm (56.9 in)
K (reach - 2.13 m (7.0 ft) , 45 ° dump)	2500 mm (98.4 in)
L (dig depth)	119 mm (4.7 in)
ISO Load Specifications	
Operating load	7808 kg (17214 lb)
Tipping load	
Machine straight	18449 kg (40673 lb)
40° turn	15616 kg (34428 lb)

NOTE: *Refer to country regulation foreseen for exceptional vehicles*

Weight adjustments and Material Weights [60639693]

1021F Weight Adjustment Specifications

Z-Bar Applications

Tire Option	Operating Weight	Tipping Load Adjustment (straight)	Tipping Load Adjustment (40° turn)
26.5 x 25 12 ply L2	-334 kg (-736 lb)	-499 kg (-1101 lb)	-648 kg (-1429 lb)
26.5 x 25 12 ply L3	-129 kg (-284 lb)	-58 kg (-129 lb)	-148 kg (-327 lb)
Standard counterweight	24399 kg (53791 lb)	19046 kg (41989 lb)	15876 kg (35001 lb)

NOTE: Unit equipped with **4.2 m³ (5.50 yd³)** bucket, MD pin on bucket w/bolt-on edge, 26.5R25 XHA2 Michelin tires, **ROPS** cab with heater and air conditioner, lights, full counterweight, standard batteries, front and rear fenders, full fuel tank, and **79 kg (175 lb)** operator.

XR Applications

Tire Option	Operating Weight	Tipping Load Adjustment (straight)	Tipping Load Adjustment (40° turn)
26.5 x 25 12 ply L2	-334 kg (-736 lb)	-341 kg (-751 lb)	-435 kg (-959 lb)
26.5 x 25 12 ply L3	-129 kg (-284 lb)	-57 kg (-126 lb)	-110 kg (-242 lb)
Standard counterweight	25688 kg (56633 lb)	16155 kg (35616 lb)	13455 kg (29663 lb)

NOTE: Unit equipped with **4.2 m³ (5.50 yd³)** bucket, MD pin on bucket w/bolt-on edge, 26.5R25 XHA2 Michelin tires, **ROPS** cab with heater and air conditioner, lights, full counterweight, standard batteries, front and rear fenders, full fuel tank, and **79 kg (175 lb)** operator.

1121F Weight Adjustment Specifications

Z-Bar Applications

Tire Option	Operating Weight	Tipping Load Adjustment (straight)	Tipping Load Adjustment (40° turn)
26.5 x 25 12 ply L2	-334 kg (-736 lb)	-563 kg (-1241 lb)	-857 kg (-1889 lb)
26.5 x 25 12 ply L3	-129 kg (-284 lb)	-86 kg (-1918 lb)	-252 kg (-555 lb)
Auxiliary steering	62 kg (138 lb)	92 kg (2002 lb)	170 kg (170 lb)

NOTE: Unit equipped with **4.0 m³ (5.25 yd³)** bucket, GP pin on bucket w/bolt-on edge, 26.5R25 XHA2 Michelin tires, ROPS cab with heater and air conditioner, lights, full counterweight, standard batteries, front and rear fenders, full fuel tank, and **79 kg (175 lb)** operator.

XR Applications

Tire Option	Operating Weight	Tipping Load Adjustment (straight)	Tipping Load Adjustment (40° turn)
26.5 x 25 12 ply L2	-334 kg (-736 lb)	-388 kg (-856 lb)	-580 kg (-1280 lb)
26.5 x 25 12 ply L3	-129 kg (-284 lb)	-70 kg (-155 lb)	-172 kg (-378 lb)
Auxiliary steering	62 kg (138 lb)	81 kg (178 lb)	69 kg (152 lb)

NOTE: Unit equipped with **4.0 m³ (5.25 yd³)** bucket, GP pin on bucket w/bolt-on edge, 26.5R25 XHA2 Michelin tires, ROPS cab with heater and air conditioner, lights, full counterweight, standard batteries, front and rear fenders, full fuel tank, and **79 kg (175 lb)** operator.

Material Weights

The following reference table provides typical material weights:

Material	xxx kg/m ³ (xxx lb/yd ³)
Alum-lump	881 kg/m ³ (1485 lb/yd ³)
Pulverized	769 kg/m ³ (1296 lb/yd ³)
Ashes	561 - 883 kg/m ³ (946 - 1488 lb/yd ³)
Bauxite	1202 - 1992 kg/m ³ (2026 - 3358 lb/yd ³)
Beans	769 kg/m ³ (1296 lb/yd ³)
Charcoal	368 kg/m ³ (620 lb/yd ³)
Chips	288 kg/m ³ (485 lb/yd ³)
Coal	1282 kg/m ³ (2161 lb/yd ³)
Coke - lump - loose	849 - 1009 kg/m ³ (1431 - 1701 lb/yd ³)
Clay	368 - 513 kg/m ³ (620 - 865 lb/yd ³)
Concrete	1378 - 1778 kg/m ³ (2323 - 2997 lb/yd ³)
Copper ore	1666 kg/m ³ (2808 lb/yd ³)1666
Corn - shelled	673 kg/m ³ (1134 lb/yd ³)
Cottonseed	401 kg/m ³ (676 lb/yd ³)401
Earth - dry loam	929 - 1089 kg/m ³ (1566 - 1836 lb/yd ³)
Earth - wet	1602 - 1666 kg/m ³ (2700 - 2808 lb/yd ³)
Earth - sand gravel	1570 kg/m ³ (2646 lb/yd ³)
Ensilage	577 kg/m ³ (973 lb/yd ³)
Granite	1490 - 1778 kg/m ³ (2511 - 2997 lb/yd ³)
Gravel - dry	1522 kg/m ³ (2565 lb/yd ³)
Gravel - wet	1906 kg/m ³ (3213 lb/yd ³)
Ice - crushed	593 kg/m ³ (1000 lb/yd ³)
Iron ore	2323 kg/m ³ (3916 lb/yd ³)
Limestone - loose - crushed	1538 - 1602 kg/m ³ (2592 - 2700 lb/yd ³)
Oats	416 kg/m ³ (701 lb/yd ³)
Peanuts - shelled	280 kg/m ³ (472 lb/yd ³)
Peas	769 kg/m ³ (1296 lb/yd ³)
Peat - solid	753 kg/m ³ (1269 lb/yd ³)
Phosphate - granular	1442 kg/m ³ (2431 lb/yd ³)
Potash	1089 kg/m ³ (1836 lb/yd ³)
Potatoes	769 kg/m ³ (1296 lb/yd ³)
Quartz - granular	1762 kg/m ³ (2970 lb/yd ³)
Rice	769 kg/m ³ (1296 lb/yd ³)
Rye	705 kg/m ³ (1188 lb/yd ³)
Salt - rock - solid	2163 kg/m ³ (3646 lb/yd ³)
Sand & gravel - dry	1730 kg/m ³ (2916 lb/yd ³)
Wet	2003 kg/m ³ (3376 lb/yd ³)
Sand - foundry	1522 kg/m ³ (2565 lb/yd ³)
Shale	1410 kg/m ³ (2377 lb/yd ³)
Slag - crushed	1121 kg/m ³ (1890 lb/yd ³)
Slate	2243 kg/m ³ (3781 lb/yd ³)
Snow	240 - 801 kg/m ³ (405 - 1350 lb/yd ³)
Soybeans	743 kg/m ³ (1252 lb/yd ³)
Sugar beet pulp - wet	561 kg/m ³ (946 lb/yd ³)
Sugar - raw	961 kg/m ³ (1620 lb/yd ³)
Sulphur - lumpy	1330 kg/m ³ (2242 lb/yd ³)
Taconite	1714 kg/m ³ (2889 lb/yd ³)1714
Wheat	769 kg/m ³ (1296 lb/yd ³)

9 - ACCESSORIES

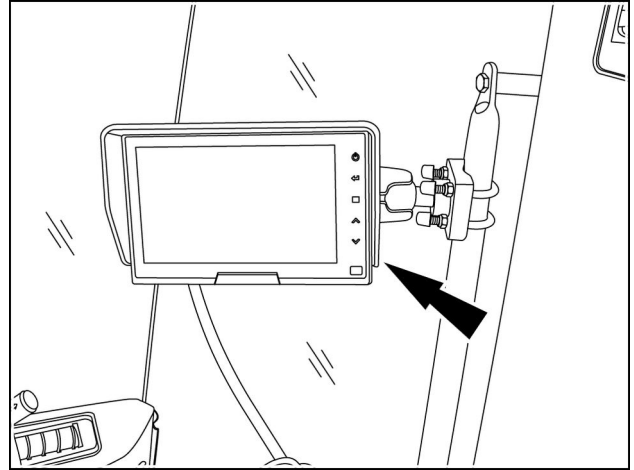
General accessories [60639785]

Rear view back up camera (optional)

The rear view back-up camera reduces vehicle blind spots during reversing operations. It assists operators when backing for loading operations and offers a view of other equipments, obstacles, and/or personnel in the work area. Refer to the camera manufacturer's instructions for correct operation of the camera monitor.

The camera monitor is mounted in the operator's compartment, and the camera eye is located behind the rear grille. The camera eye has built-in moisture resistance for equipment that requires power washing and/or equipment that operates in harsh environments.

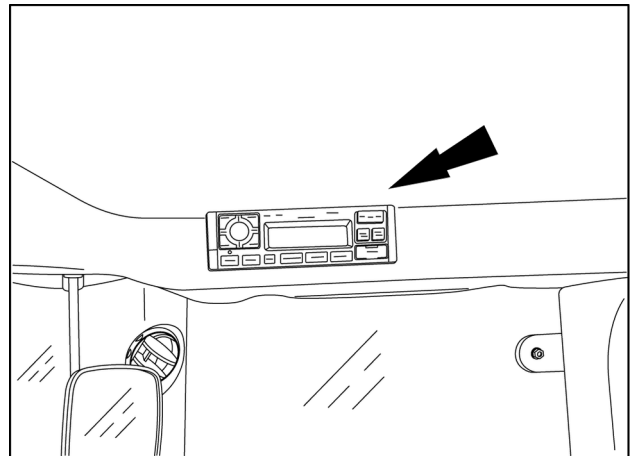
The camera is available from your authorized dealer.



RCPH10WHL491AAH 1

Radio (optional)

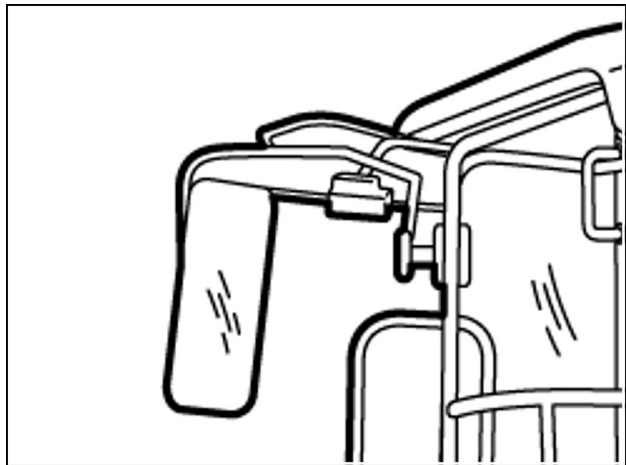
A radio is available for this machine from your dealer. Refer to the radio manufacturer's instructions for correct operation.



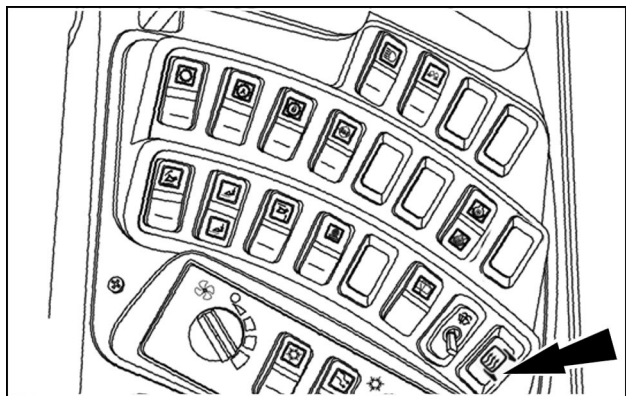
RCPH11WHL285AAH 2

Heated mirror (optional)

Exterior mirrors on the machine are an important safety feature. They allow the operator to see around the machine when backing or driving. Heated mirrors offer an additional advantage by keeping the operator's field of vision clear of ice, frost, freezing rain, etc. when using the exterior mirrors. The heated feature eliminates scraping mirrors in inclement weather. Turn the heated mirrors on and off with a rocker switch located on the right hand console.



RCPH11WHL278AAH 3



RCPH11WHL290AAH 4

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Dealer's stamp



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Availability of some models and equipment builds varies according to the country in which the equipment is being used. For exact information about any particular product, please consult your Case dealer.