ORIGINAL INSTRUCTIONS *- according to Directive 2006/42/EC, Annex I, 1.7.4.1*

WX168
WX188
Wheeled Excavator

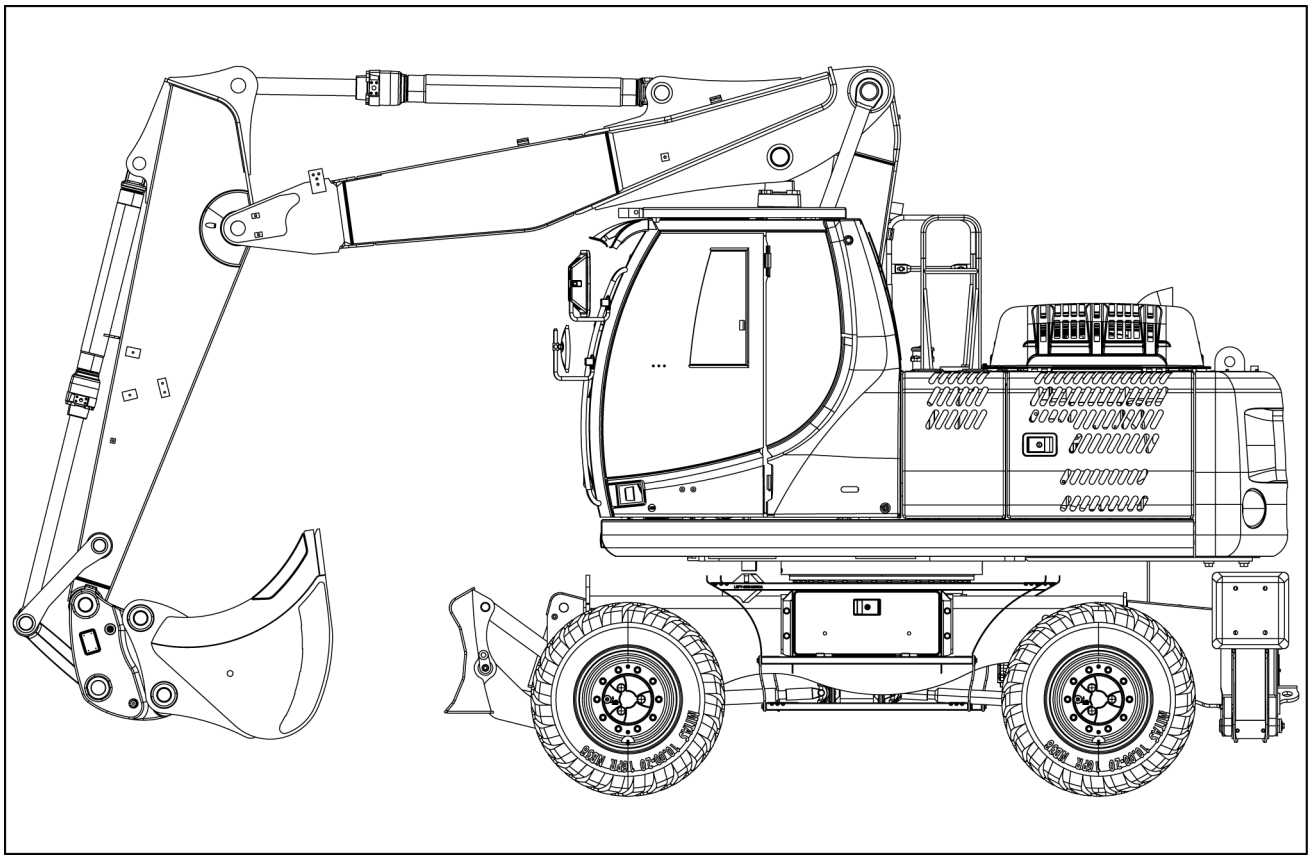
OPERATOR'S MANUAL

Part number 47986798
1st edition English
May 2016
Replaces part number 47819505

CASE CONSTRUCTION

Product identification

The wheeled excavators are hydraulic operation machines. They essentially consist of a wheeled undercarriage on which a slewing bearing is mounted, which is coupled to the upper frame. The upper frame supports the front attachment, the engine, the hydraulic components, the cab, the fuel tank and the counterweight. When the operator activates the controls (electrohydraulic control levers and pedals), the hydraulic pumps rotated by the engine suck oil from the tank and convey it to the control valve; the control valve, in turn, sends it to the relevant users. A cooling system keeps the hydraulic fluid at a normal operating temperature.



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Please record the following information

Record the machine and Product Identification Numbers (PIN). When ordering parts, obtaining information or assistance, always supply your dealer with the type and PIN of your machine or accessories. Keep a record of these numbers and your Manufacturer's Statement of Origin in a safe place. If the machine is stolen, report the numbers to your local law enforcement agency.

Model _____

Product Identification Number (PIN) _____

Date Purchased _____

Engine Model _____

Engine Pin _____

2 - SAFETY INFORMATION

Signal word definitions

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 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 that, if not avoided, will result in death or serious injury.

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

⚠ CAUTION indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

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

Machine safety

NOTICE: *Notice indicates a situation that, if not avoided, could result in machine or property damage.*

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 that 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.

⚠ Driving the machine safely ⚠

Before setting off

Remove any soil, mud, snow, ice, grease and oil from your working footwear before operating the machine. You might otherwise slip from steps and pedals and thus initiate inadvertent movements. Securely fasten the seat belt. Warn persons in the immediate vicinity by sounding the horn before setting off.

Travelling over long distances off road

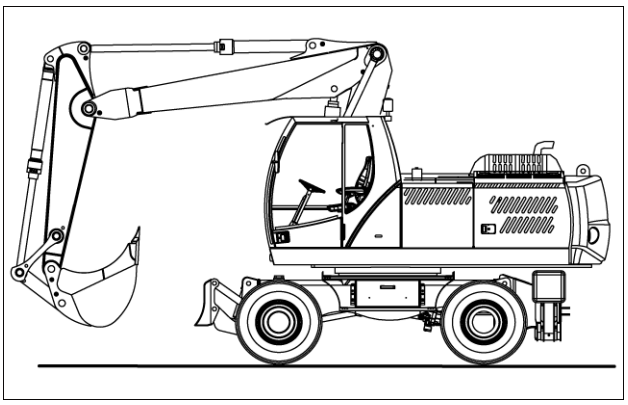
Before travelling over long distances, return the front attachment in the travel direction and activate the upper structure holding brake in locked mode.

Travelling on slopes, uphill and downhill

Before going on a slope put the machine in base position as showed in the illustration **11**:

- front attachment in front position;
- steering axle pointing in the direction of travel;
- holding brake in locked position.

Do not travel across slopes or reverse the machine across slopes as it could slip or overturn.
The proper way to climb a ramp is shown in the illustration **13**
Take special care on slippery soils.
Ensure that the tires offer adequate grip. Only then are the steering and braking properties of the machine maintained.



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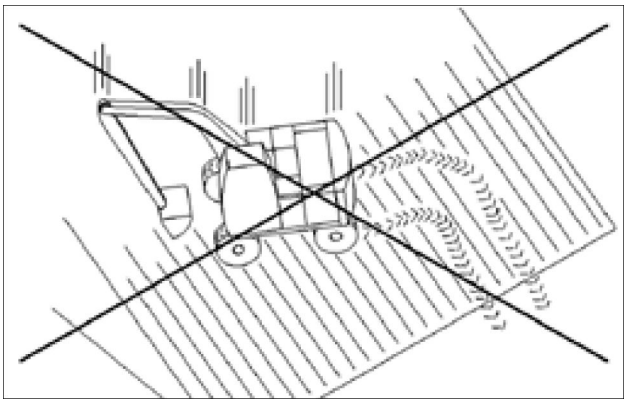

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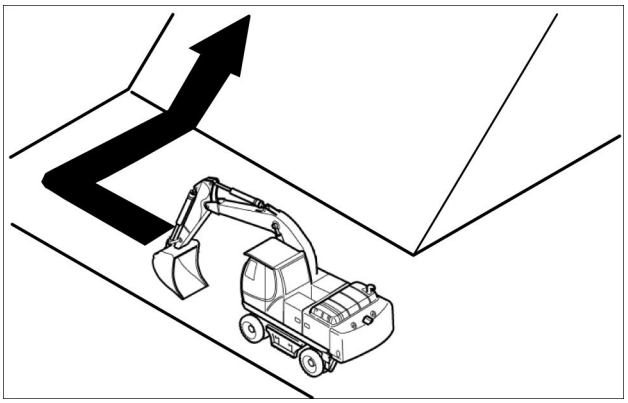

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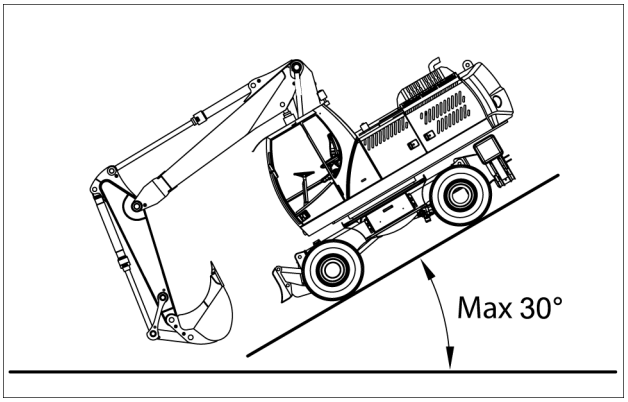
During long tracks with exceptional gradient and at too high speed, you could loose control over the machine.
Never travel tracks with a gradient higher than **30 °** - **57.7 %**.
Never travel on long downhill tracks with the service brake engaged. This may cause an extreme wear of the brake plates or the brake's breakage.
Before travelling downhill or uphill, to prevent the travel speed from becoming too fast, engage the 1st gear. With remarkable gradients, engage the creep speed.



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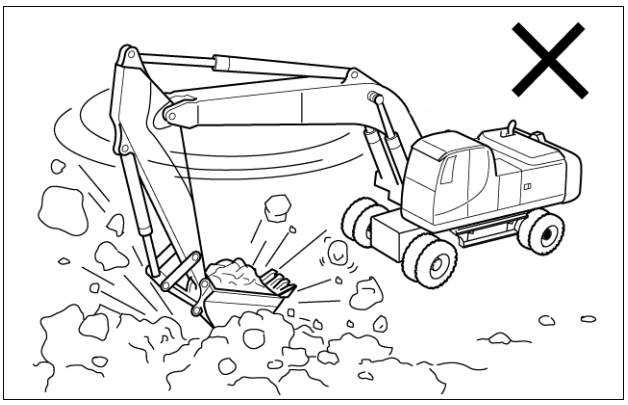
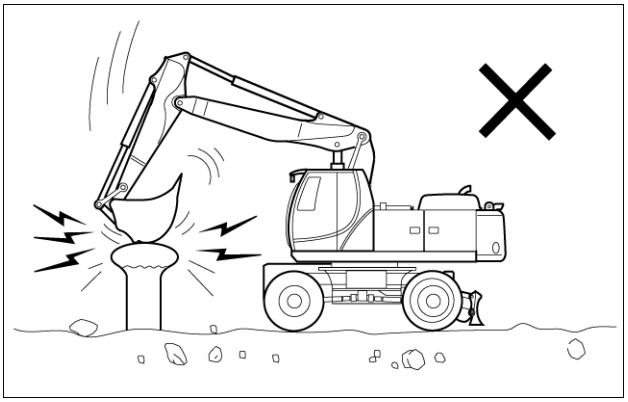
Do not use the turret swing for digging
DO NOT use the turret swing for digging or moving rocks. An excessive stress on the front attachment could results in damages to the structure reducing the operating life of the swing system. Also, this inappropriate use of the machine could cause serious injuries or fatalities.



SP0035_1 34

Do not use the bucket as a hammer
The use of the bucket as a hammer or for piling operations could cause serious damages to the bucket itself and the components of the front attachment. Also, this inappropriate use of the machine could cause serious injuries or fatalities.



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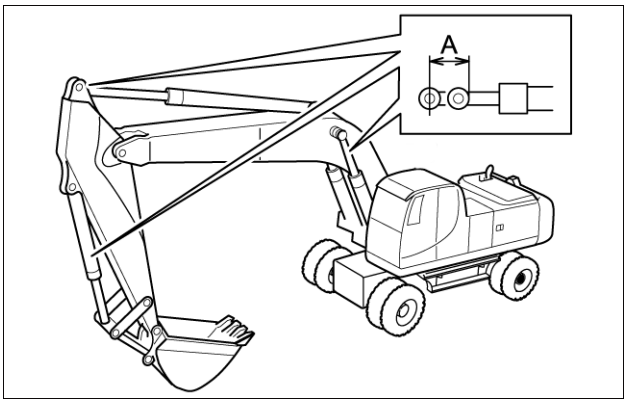
Do not operate the cylinder to full stroke
Do not extend repeatedly the bucket and the arm cylinders full stroke with the purpose of cleaning the bucket from residual materials. This could cause damages to the cylinders. To remove residues from the bucket, use water under pressure or remove them manually.



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⚠ Fire prevention ⚠

Handle fuel with care: it is highly flammable. If fuel ignites, an explosion and/or a fire may occur, possibly resulting in serious injury or death.

- Do not refuel the machine while smoking or when near open flame or sparks.
- Always stop the engine before refuelling the machine.
- Fill the tank outdoors.

All fuels, most lubricants, and some antifreeze fluids are flammable.

- Store flammable fluids well away from fire hazards.
- Do not burn or puncture pressurized containers.
- Do not store oily rags; they can ignite and burn spontaneously.

Check for Oil Leaks:

- Fuel, hydraulic oil and lubricant leaks can lead to fires.
- Check for missing or loose clamps, kinked hoses, lines or hoses that rub against each other, damage to the oil-cooler, and loose oil cooler flange bolts which may cause oil leaks.
- Tighten, repair or replace any missing, loose or damaged clamps, lines, hoses, oil-cooler and oil-cooler flange bolts.
- Do not bend or strike high-pressure lines.
- Never install bent or damaged lines, pipes, or hoses.

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SP0058 58

Noise emission

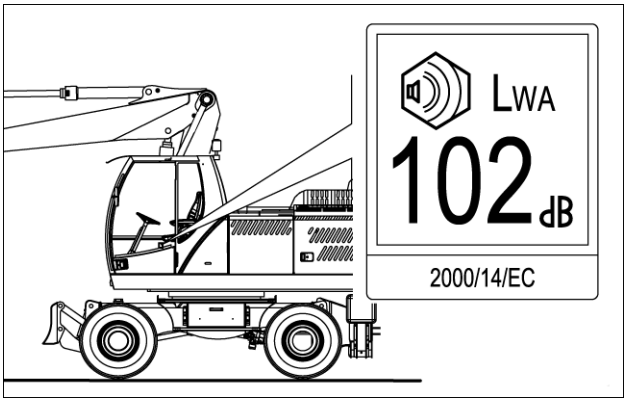
SOUND POWER LEVEL (acoustic external)

LWA:

WX168: **101 dB** (A)

WX188: **102 dB** (A)

Sound power level guaranteed, determined in compliance with European standard **2000/14/EC**.



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SOUND PRESSURE LEVEL IN THE OPERATOR'S SEAT (acoustic internal)

LpA:

WX168: **73 dB** (A)

WX188: **74 dB** (A)

Sound pressure level continuous, measured inside the cab with door and windows closed and with the heater/air conditioner blower operating at middle range speed, measured on an identical machine, in compliance with **ISO 6396:2008** Standard. Measured uncertainty KpA is equal to **2.5 dB**, determined according ISO 4871:1996.

EC Declaration of Conformity

The page that follows contains a copy of the declaration of conformity. The Manufacturer declares that the machine has been designed and constructed in conformity with European Directives and amendments and the decrees and regulations governed by national laws.

The original declaration of conformity is supplied with each machine. Keep the original copy in a safe place. The local authorities may ask for this document to be presented in order to check the conformity of your machine.

There is a translation of the declaration on the back of the original copy in the language of the country in which the machine is used.

There are some additional notes for greater clarity:

1. The main safety components installed and supplied with the machine are listed in point 1.2. Some of these are supplied as standard, such as the FOPS/ROPS. Others, such as the variant for moving suspended loads or the cab front guard, are available on request by the customer.
2. Point 2 contains all the information required by the Acoustic emission directive **2000/14/EC**. Refer to the original copy for specific information on the equipment. Other information relating to the sound power level guaranteed by the equipment (LWA) can be found on page **2-41** . This page also contains information relating to the acoustic pressure level in the driver's seat (LpA) which is not the subject of the above mentioned directive and therefore not contained in it.
3. General registration number for this type of equipment. The sequence of letters and numbers may vary depending on the configuration of the equipment.
4. Registration number of the declaration of conformity. Refer to this number when information or assistance is requested from the manufacturer about the declaration of conformity.
5. Signature of a person authorized to sign the document on behalf of the company.

OPERATOR'S SEAT

Operator's seat

To operate the machine correctly with maximum efficiency and comfort, the seat should be correctly adjusted to suit the weight and height of the operator.

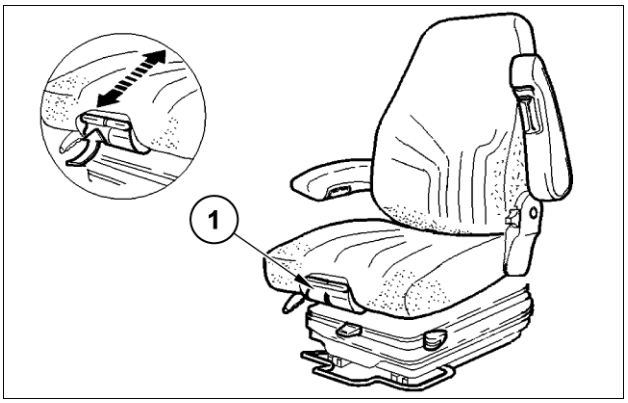
⚠ WARNING

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

Operator's seat with pneumatic suspension

Adjusting the seat cushion height
Pull handle **(1)** at front edge of seat upwards, adjust seat cushion, engage handle **(1)**.Adjustment 4 steps of **15 mm** (**0.6 in**).



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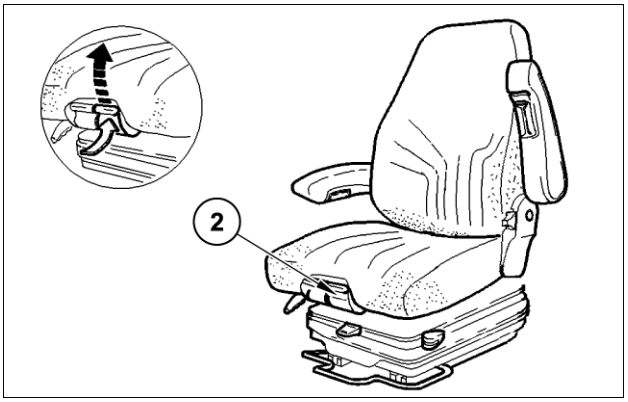
Adjusting the seat cushion angle
Pull handle **(2)** at front edge of seat upwards, adjust seat cushion, engage handle **(2)**. Adjustment range **-3 °** / **+5 °** (increments of **2.5 °**).



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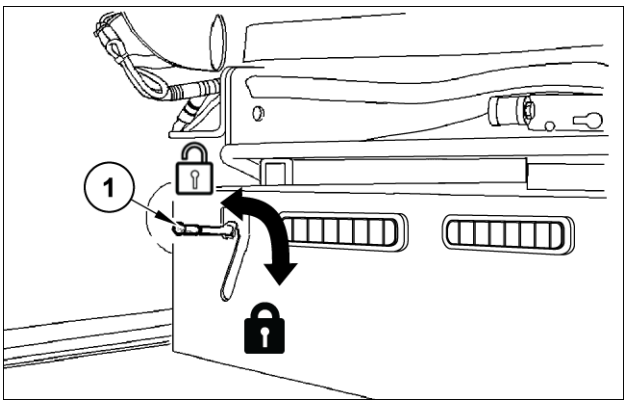
Upper structure holding lock

The Upper structure holding lock is a mechanical lock and has two positions:

- LOCK: it prevents the possibility of the upper structure of machine unexpected swinging if the left control levers is accidentally moved
- UNLOCK: the upper structure of machine can to swing if the left control lever is moved

OPERATION OF LOCKING

Return the machine to basic position for travel, (see Chapter 5), so that the holding pin **(2)** in the upper structure is set right above the holding bracket **(3)** on the undercarriage.
The holding pin **(2)** is set right above the opening of the undercarriage.
Lift the lever **(1)** of the pin **(2)** and move it in down position.
The locking pin engages in the opening of the carriage.
If the locking pin cannot be turned at all or only with difficulty, slew the upper structure slowly to the left or to the right. Meanwhile push the locking pin downwards.



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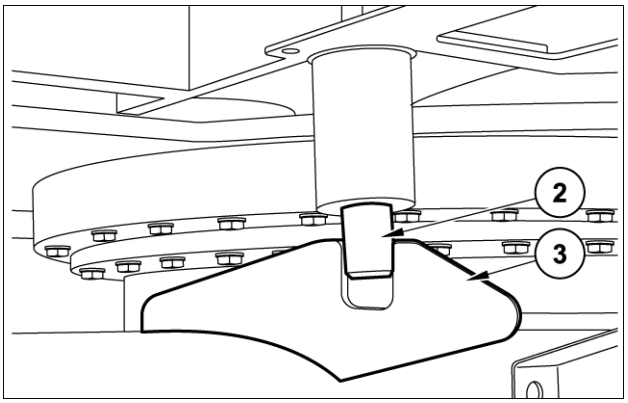

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Additional pedal

The additional pedal is used only when there are some optional functions.
The additional pedal is used to control optional equipment such as hydraulic shears or hydraulic hammer.

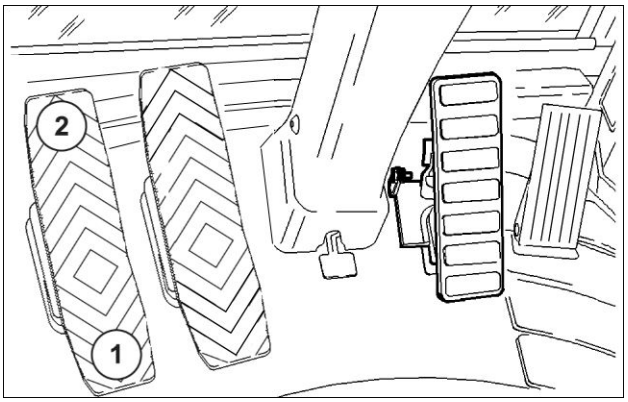
OPERATION

Hydraulic Shears

- Select the Hydraulic Shears function by depressing switch that show the shears.
  To close the shears: press pedal forward **(2)**
- To open the shears: press pedal backward **(1)**

Hydraulic Hammer

- Select the Hydraulic Hammer function by depressing switch that show the hammer. To operate with hammer: press pedal backward **(1)**



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CONTRAST

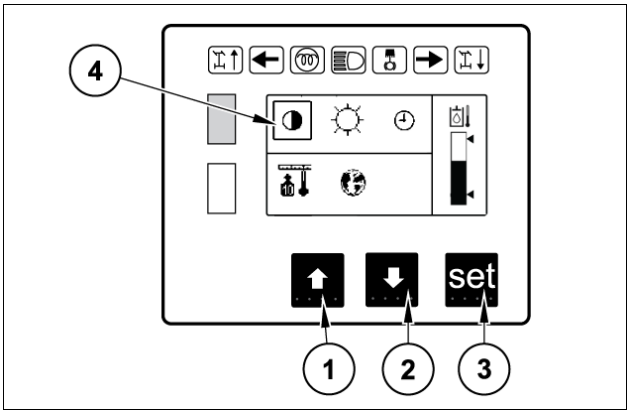
Under poor light conditions, strong solar light or extreme cold, the display contrast may need to be modified. In this way the readability of the information displayed is ensured.

Depress repeatedly button with downward arrow **(2)**, until the contrast symbol appears on grey background **(4)**.

Confirm the selection with set button **(3)**.

By depressing the button with upward arrow **(1)**, the contrast increases, by depressing the button with downward arrow **(2)** the contrast decreases at little steps. The contrast setting is graphically displayed like a column **(5)**.

With set button **(3)** you exit the sub-menu “Contrast” and return to main menu “Display”. Concurrently the contrast settings are memorized.



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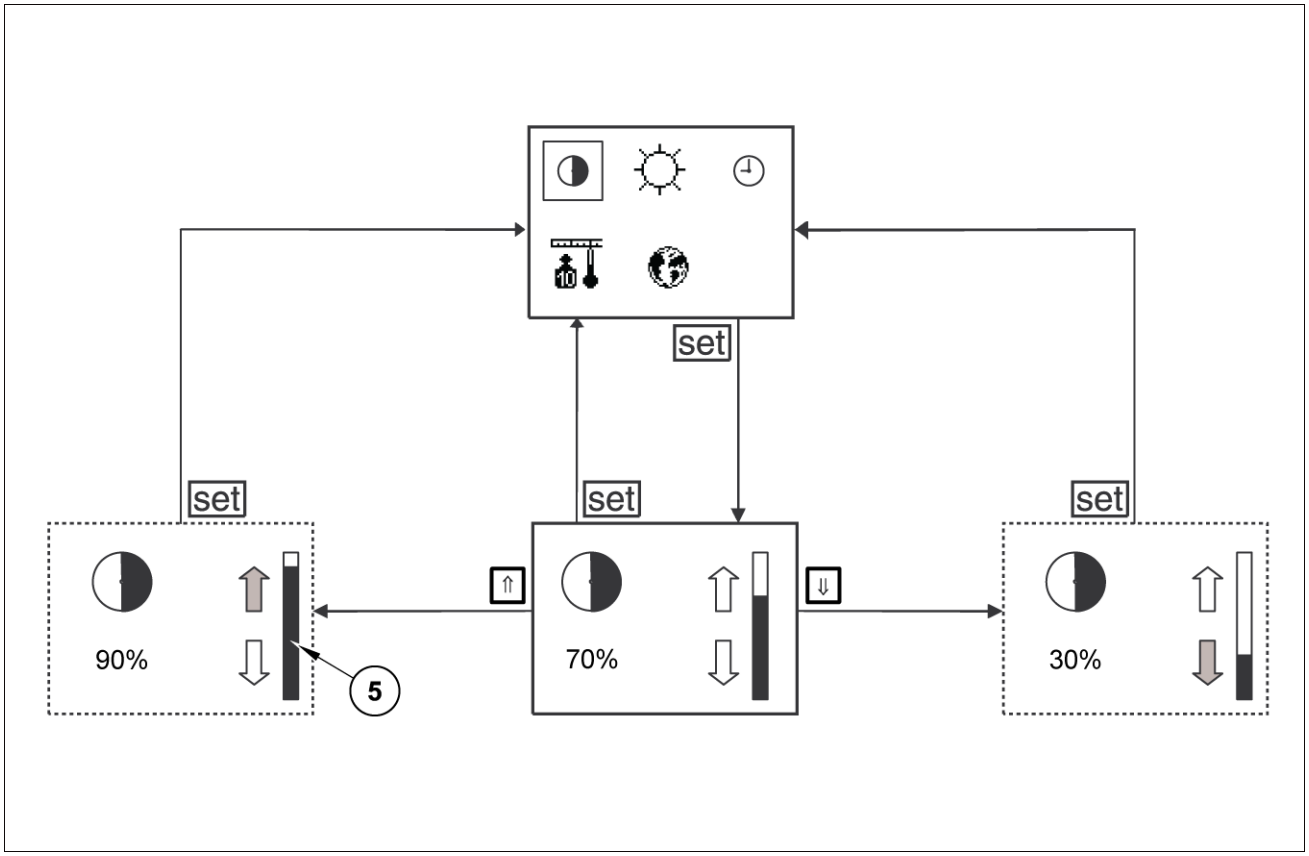

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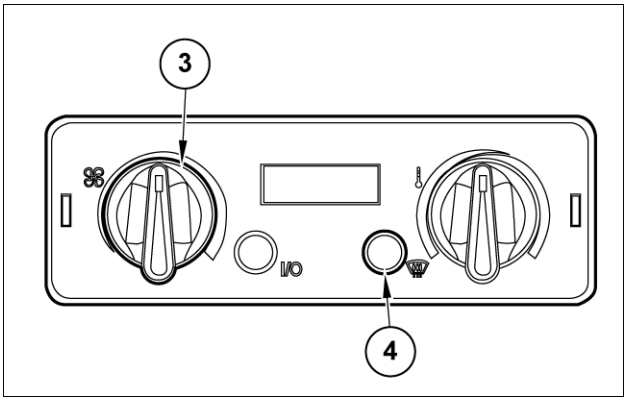
Blower speed control (3)

With the ATC in "Off" mode, turn the blower speed control **(3)** to activate the blower only and produce a non-conditioned air flow.
Turn the blower speed control **(3)** clockwise to increase the blower speed and produce more air flow out of the cab vents, turn counter-clockwise to reduce the air flow.
With the ATC in "Auto" mode, the blower speed control **(3)** position will have NO effect over the blower speed. The ATC controller will increase or decrease the blower motor speed as needed automatically to maintain the desired cab temperature.
If the blower motor control **(3)** is adjusted, the controller will release the automatic control over the blower motor speed and the system switches to manual mode. In manual mode, only the blower motor speed is adjusted manually, but the system will still control the air conditioning compressor and the water valve to maintain the desired temperature setpoint. In the manual mode, the icon “A” is NOT displayed.
To reactivate the ATC into its "Auto" mode, either toggle the ATC control button OFF and back ON or rotate the temperature control to its maximum/minimum position and back to the desired setpoint.
When operating in the auto climate or "Defog" mode, the blower will make a speed increase for every **0.5 °C** (**2 °F**) difference there is between the temperature setpoint and the actual cab temperature sensed by the cab temperature sensor.
If the evaporator sensor senses that the evaporator temperature is below **26 °C** (**79 °F**), and system is calling for heat the blower speed will not be increased until the evaporator temperature has increased.



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Defog control (4)

With the ATC activated, press the "defog" mode button to activate the defog mode. The digital display window displays the symbol .
The "defog" mode button toggles from automatic or manual mode into defog mode and vice versa (the system will return to the initial mode when "defog" mode is left). When going from automatic mode to "defog" mode, the system will still display the "A" icon.
Automatic "A" mode / manual mode = the system will warm or cool the air as needed to maintain the cab temp and the display will be illuminated.
= Defog, the system will run the A/C compressor full time to defog the windows and the display will be illuminated.

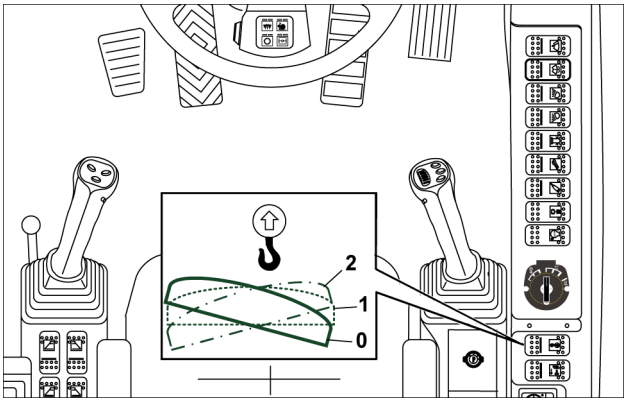
Overload (optional)

This rocker switch is mounted to give an operator the warning (acoustic and on cluster) about possible instability of the machine.
When the rocker switch is activated, the backlighting of the switch is light on.

The overload system is activated by a multistage rocker switch:

- stage 0: neutral position, overload warning is off;
- stage 1: the overload warning with settings for stabilized machine is active;
- stage 2: the overload warning with settings for unstabilized machine is active;

NOTE: *See "OVERLOAD WARNING SYSTEM" in Accessories Chapter.*



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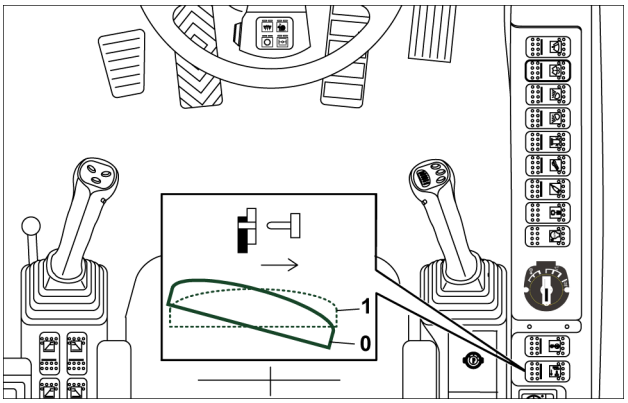
Quick coupler (optional)

The quick coupler function is activated by a one position rocker switch: to select, press the switch face without symbol. To deactivate, press the switch face with the symbol.
When the rocker switch is activated, the backlighting of the switch is light on.

NOTE: *See "HYDRAULIC QUICK COUPLER" in Accessories Chapter.*



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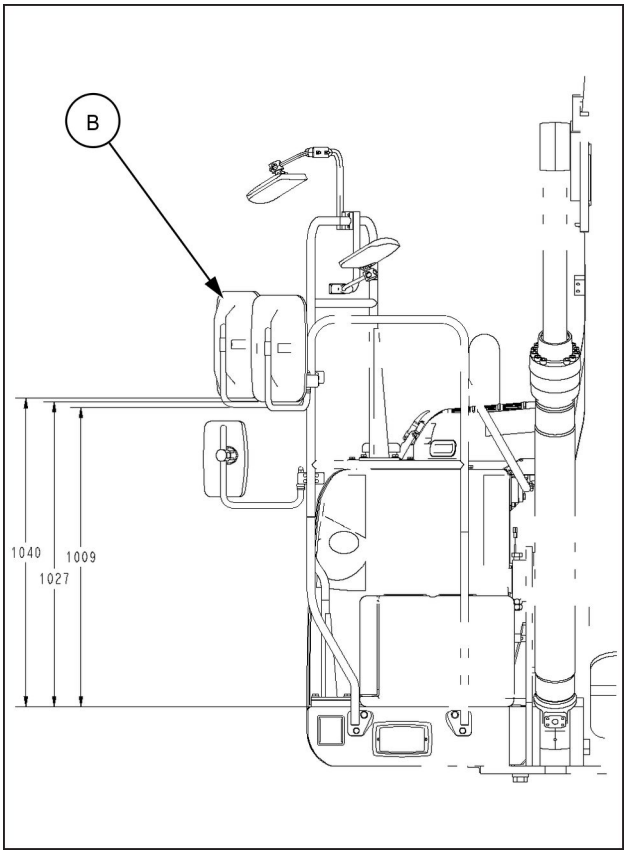
Mirror B

Install and adjust the mirror **(B)** so that the rear right end of the machine is visible from the operator's seat.



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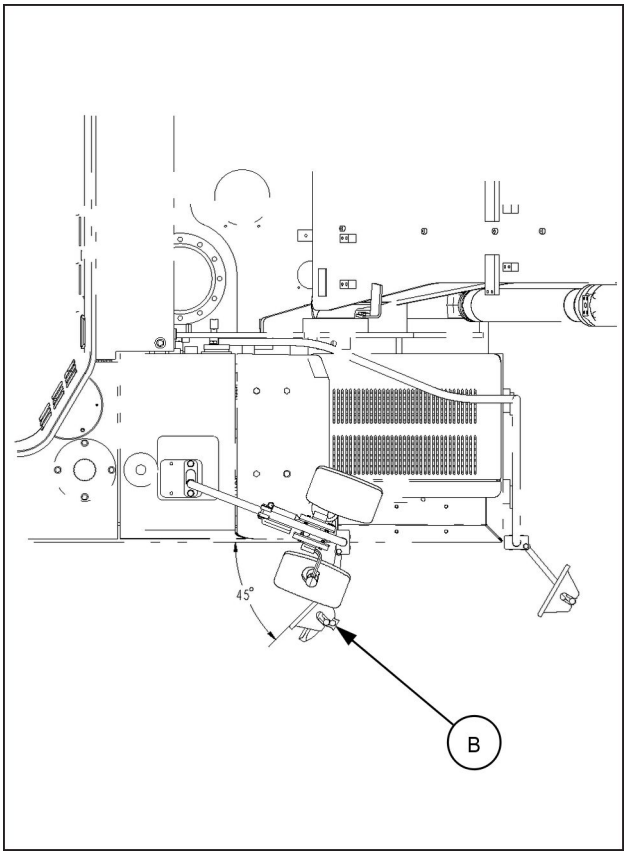

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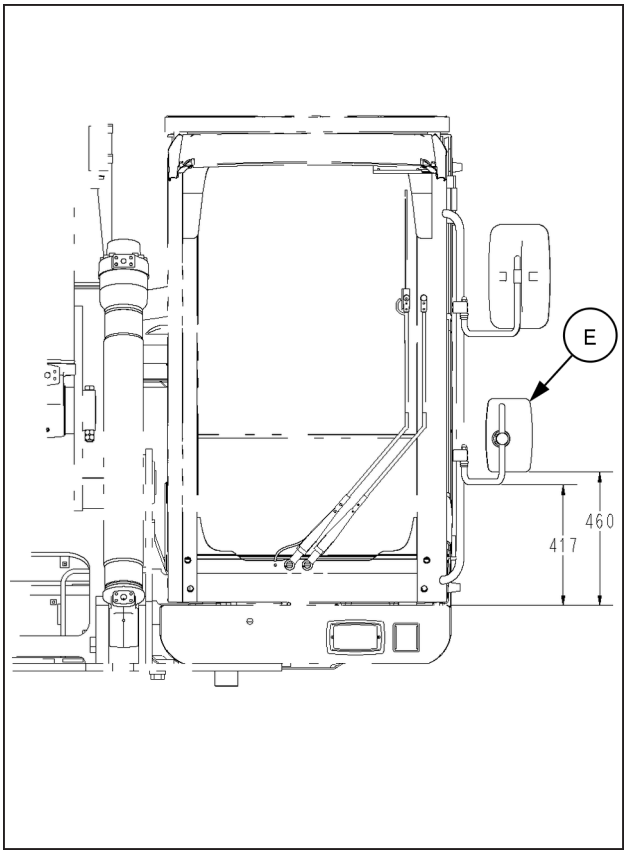
Mirror E

Install and adjust the mirror **(E)** so that the rear left end of the machine is visible from the operator's seat.



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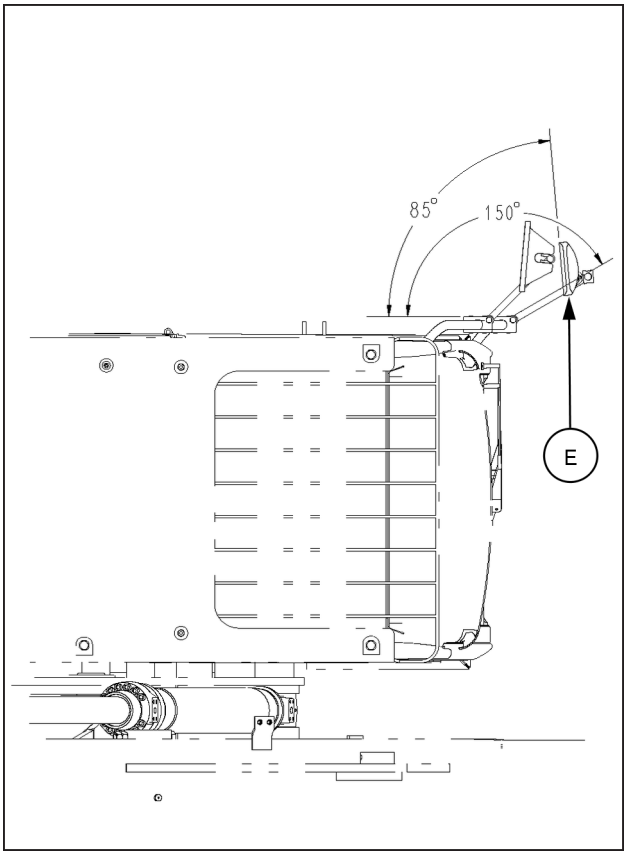

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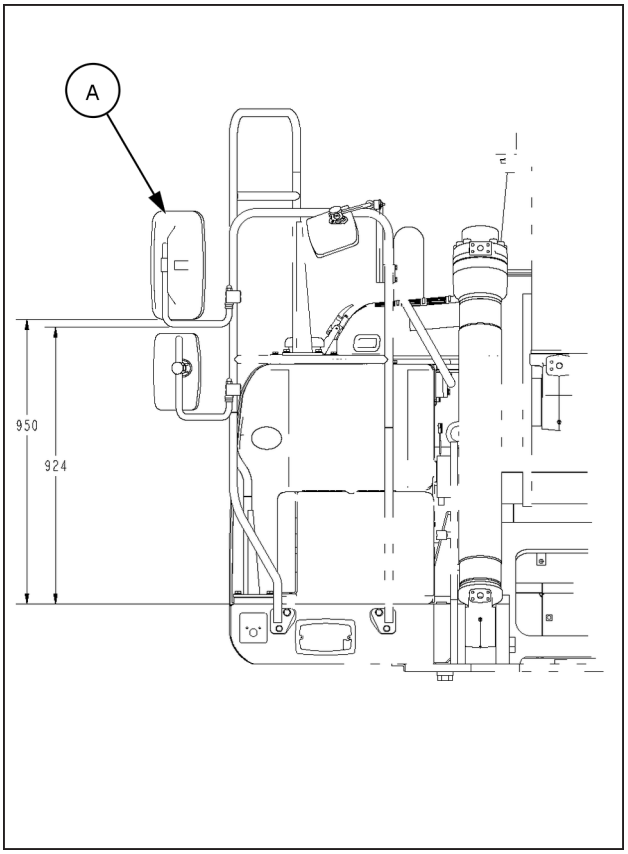
Mirror A

Install and adjust the mirror **(A)** so that the rear right end of the machine is visible from the operator's seat.



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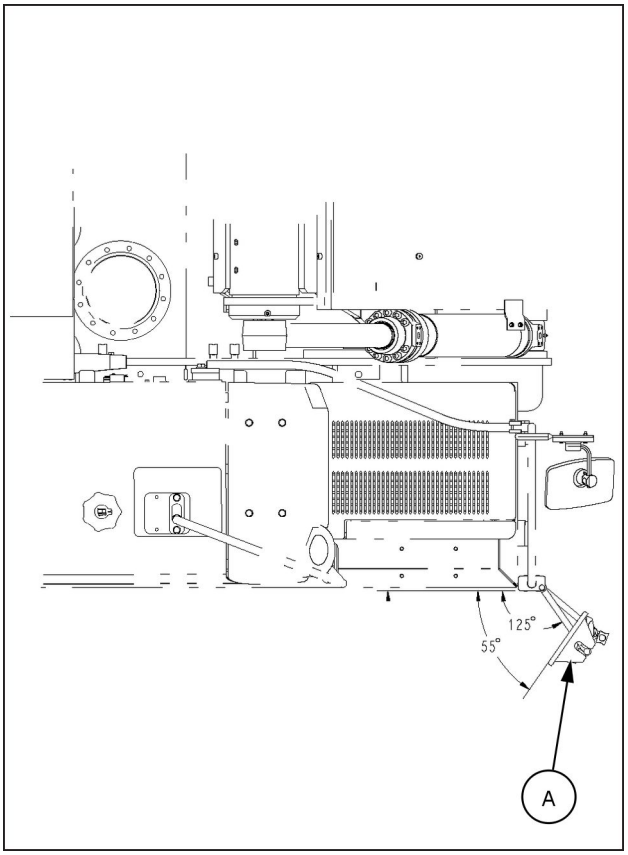

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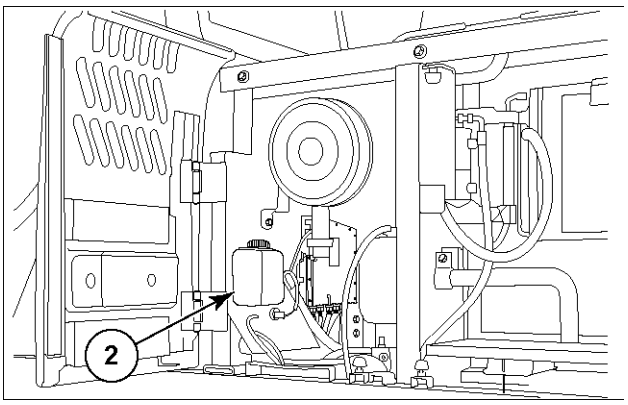
Windshield washer reservoir

This operation should be carried out consistently with how frequently the windscreen washer is used.

- Open the air filters compartment panel and lock it in open position.
- Remove cap **(1)** from windshield washer tank **(2)** and top up the level adding water and detergent liquid of the prescribed type (see "Consumables" in chapter MAINTENANCE) .
- Close the air filters compartment panel.



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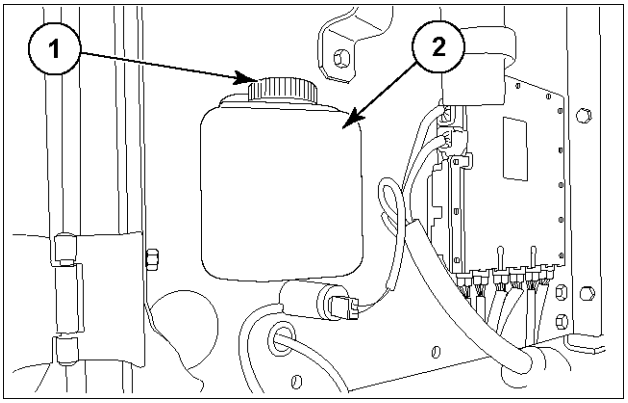

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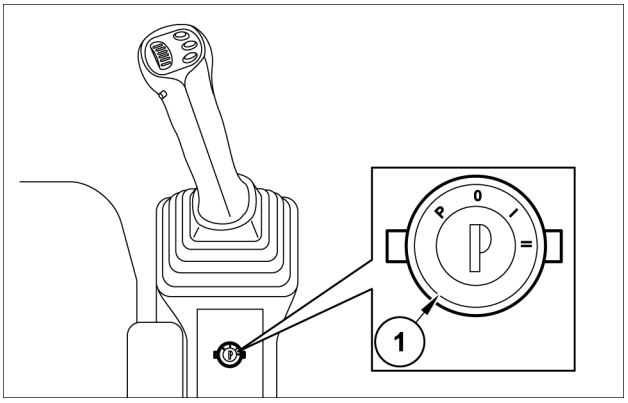
Starting the engine in cold conditions

1. Repeat the above procedure from step 1 to 5.
2. In cold temperature condition, the automatic pre heating is activated, signalled by the relevant icon **(2)** on the instrument cluster display.

NOTICE: *Before starting the engine, wait for the icon* ***(2)*** *to disappear.*

3. Turn the starter key **(1)** into II position until the engine starts. Release the starter key as soon as the engine is started. When released, the starter key returns automatically into I position.



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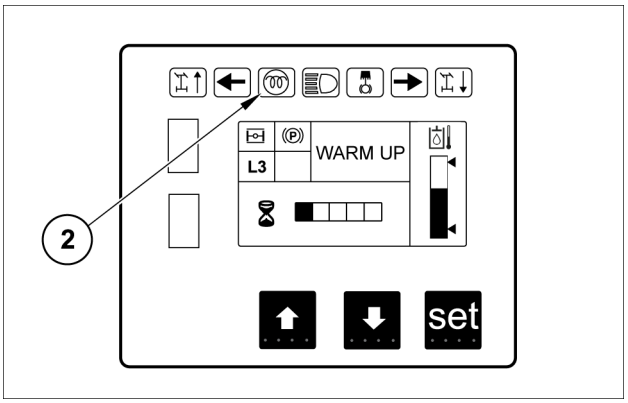

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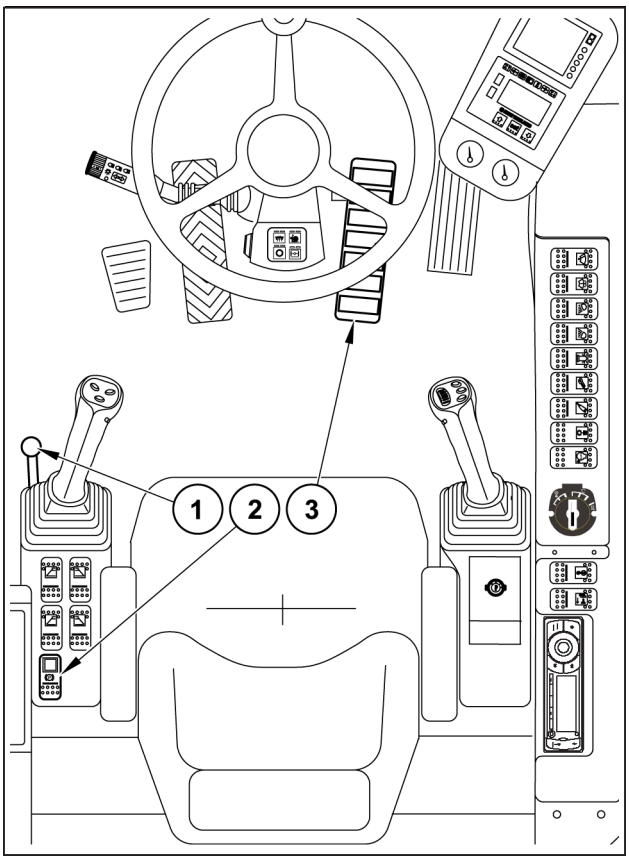
- Activate the parking brake by switch **(2)**.
- Lock the service brake **(3)**.
- Lock the upper structure by means of proper pin **(4)**.
- Deactivate the controls with lever **(1)**.
- Stop the engine. Remove the starter switch key from the ignition lock.



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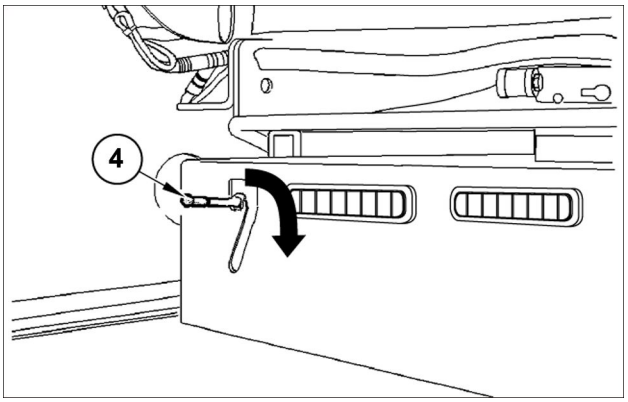
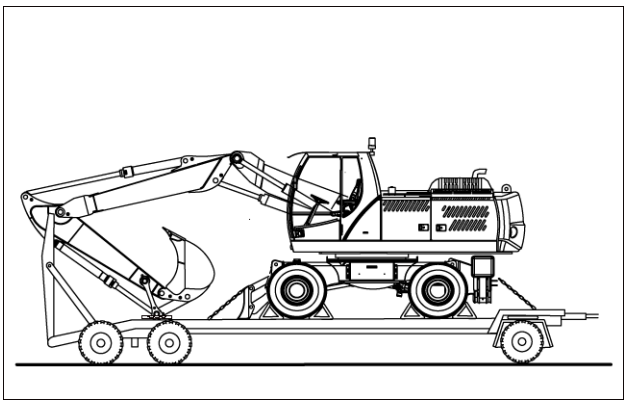


F44062N 4

- Close all the windows, the front windscreens, and lock the cab door in the close position.
- Cover the exhaust pipe to prevent water or dirt from entering.
- Place the chocks to the wheels.
- Secure the machine to the trailer correctly, so as to prevent dangerous movements, proceed as described in this chapter.



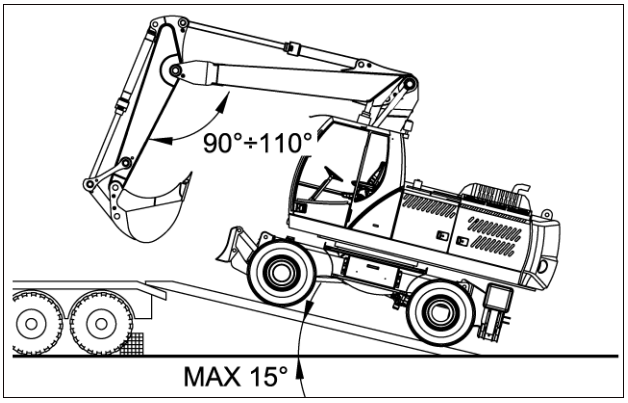
F34552N 5

Loading the machine

⚠ WARNING

Loss of control hazard!
Turn off the Auto Idle function when traveling downhill or when loading/unloading from a trailer.
Failure to comply could result in death or serious injury.

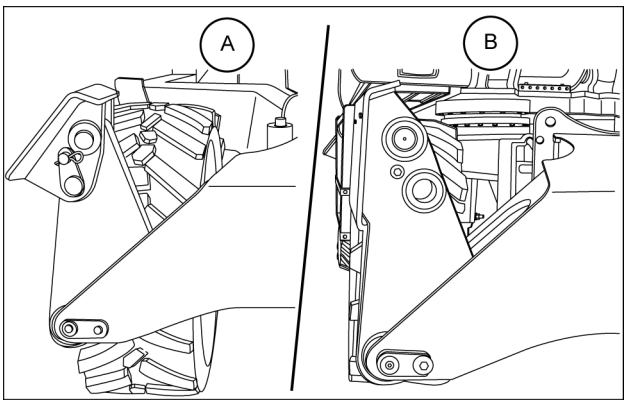
W0927A



F34534N 5

- Travel forward along the ramp with the front attachment at the front.
- Once the ramp top has been reached, and before the machine starts falling forward onto the flatbed (shifting its centre of gravity), rest the bucket flat onto the trailer flatbed (the angle between the booms should be **90 °** to **110 °**).
- Travel slowly forward until the wheels are correctly positioned on the trailer flatbed.
- Slightly raise the bucket from the flatbed, retract the dipper and keeping it tucked under, slowly swing the upper structure of **180 °**.
- Retract the bucket and rest it on proper blocks (e.g.: wooden blocks).

NOTICE: *ONLY FOR MACHINES WX188:*
do not travel on public roads with the pads of the stabilizers in the position ***(A)****. To travel on public roads it is mandatory put the pads of the stabilizers in the position* ***(B)****.*
To put the pads of the stabilizers in position ***(B)*** *refer to* ***5-1***



SMIL13WEX0066AB 3

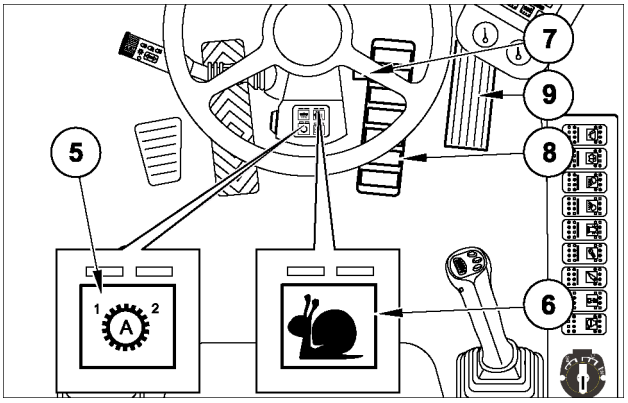
- If you have to work at a particularly low speed, select the 1st speed (off-road travel) with push-button **(5)** and then the creep speed with push-button **(6)**.
- Remove the service brake lock, by pressing the lock lever **(7)** to the left of the pedal **(8)**. The pedal has to be released slowly.
- Lock the lock lever **(7)** in travel position as show in figure. In this way the lock lever cannot lock itself if the brake pedal is pushed in the lowest position.
- Press the pedal **(9)**, the machine starts travelling. The display shows the selected gear and speed; the indicator lamps indicate the selected travel direction. Adjust the speed with the pedal **(9)**.

NOTE: *If the safety lever is put to down position while in Road Travel Mode, there is a red warning in the cluster in combination with an intermittent loud acoustic warning. But in this state, it is possible to operate with Boom, Bucket, Dipper and Positioning with reduced speed. The operator is supposed to raise the safety lever back to the top position.*

To deactivate the Road travel mode:

- Put the safety lever in LOCK position
- The machine have to be in standstill.
- Press the road travel button: right light of road travel button lights off.
- The road travel symbol disappears from the cluster.

NOTE: *if the machine is travelling, the deactivation of Road travel mode will be ignored.*



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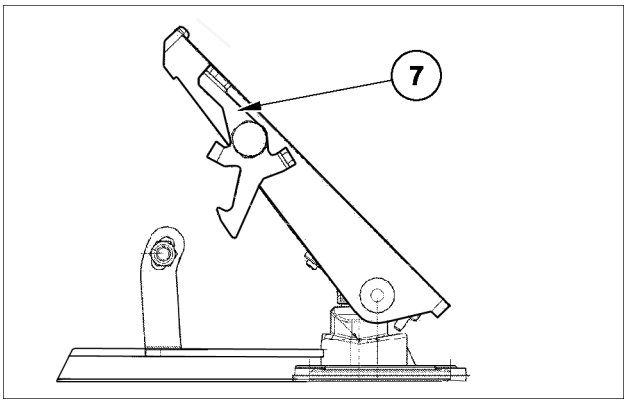

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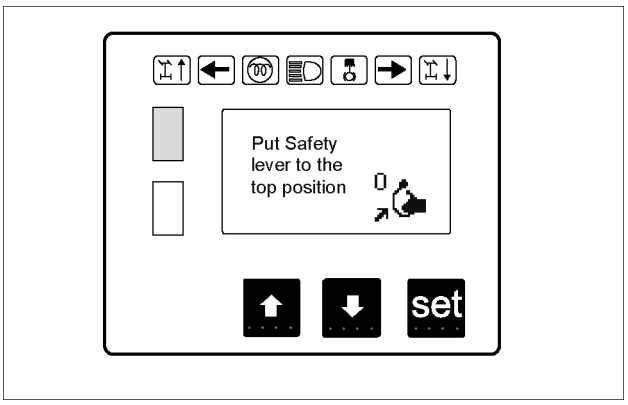


F00001N2 9

Stabilizers or blade

NOTICE: *Stabilizer and/or blade are safety devices that allow the operator to minimize the risk during the operations of digging and material handing work. Stabilizer and/or blade must be used to stabilize the machine in addition to the blocking of oscillating axle.*

Before starting work

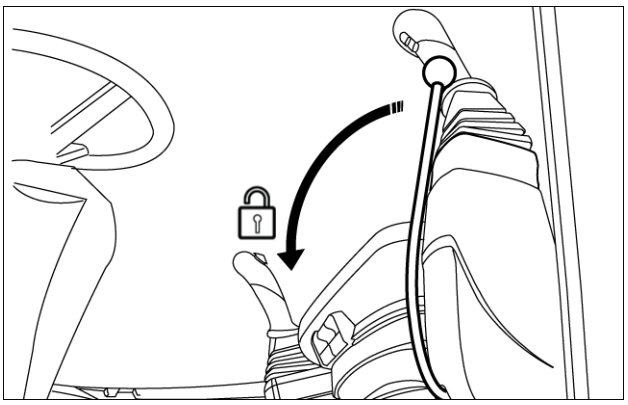
- Stop the machine on a level surface.
- Rest the bucket to the ground.
- Inspect the zone of job site where you must work: make sure that the digging area is sufficiently stable and firm to support the weight of the machine during the work operation.
- Move the machine to the area of digging, stop the machine and operate with stabilizer and/or blade controls for stabilize the machine before start the work. Block the front oscillating axle, refer to **6-20**.

Lowering of stabilizers and blade

- Make sure the safety lever in unlock position and the travel mode is not active.
- Press the pushbutton **(2)** on the front of the right control lever **(1)**.

  NOTICE: *Make sure the slider **(3)** at the right control lever **(1)** is in neutral position.*

- A loud beep can be heard.
- The symbol for stabs control **(4)** is displayed on the monitor on the left lower corner, with the highest priority.
- Stabilizers/blade control is active.
- Move the slider **(3)** on the right control lever handle **(1)** to the top **(A)**. The stabilizers moves to the ground.
- Release the slider **(3)** when the machine is stabilized.
- Push the pushbutton **(2)** for deactivate the stabilizers/ blade control.
- On the cluster the symbol for stabilizers/blade control **(4)** disappears and two loud beeps can be heard.



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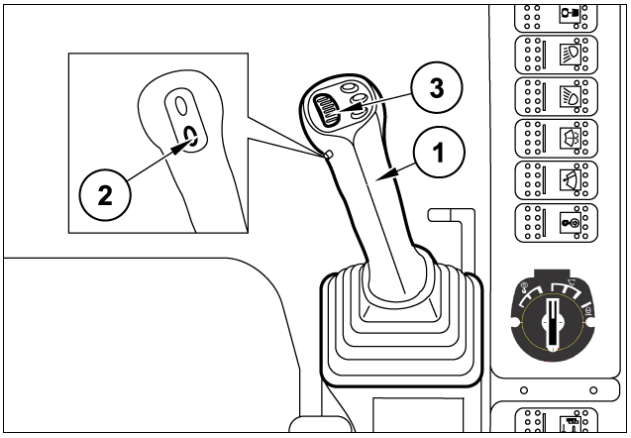

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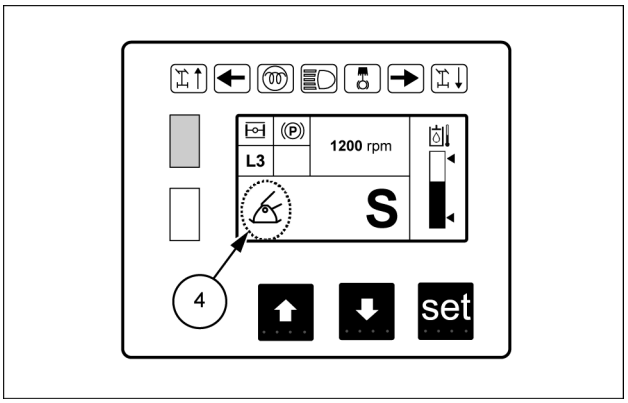

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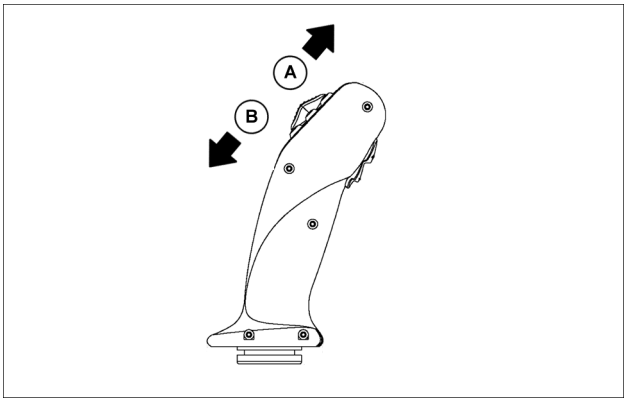


W00017 4

7 - MAINTENANCE

GENERAL INFORMATION

Foreword

⚠ DANGER

Improper operation or service of this machine can result in an accident.
Do not operate this machine or perform any lubrication, maintenance, or repair on it until you have read and understood the operation, lubrication, maintenance, and repair information.
Failure to comply will result in death or serious injury.

D0010A

⚠ WARNING

Maintenance hazard!
Before you start servicing the machine, attach a DO NOT OPERATE warning tag to the machine in a visible area.
Failure to comply could result in death or serious injury.

W0004A

NOTICE: *if you use the machine under particular severe conditions (dusty or corrosive atmosphere, etc.) reduce the intervals between maintenance operations.*

SERVICING PERSONNEL

Inspection and servicing personnel must have the necessary know-how on the inspection and servicing of this or comparable machines.
The necessary know-how can be acquired in several days' instruction, for instance by a specialist fitter or by attending a training course.

MAINTENANCE CHART

Maintenance chart

Maintenance action	Cleaning	Check	Grease	Drain fluid	Replace	Change fluid	Page no.
Within the first 50 hours							
Bucket grease fittings	x						**7-13**
Attachment	x						**7-13**
Within the first 500 hours							
Bucket grease fittings	x						**7-14**
Attachment	x						**7-14**
Every 50 hours							
Swing bearing	x						**7-15**
Front axle grease fittings – Axles floating pins	x						**7-16**
Swing reduction unit oil		x					**7-17**
Cab outside air filter			x				**7-18**
Cab air recirculation filter			x				**7-19**
Engine cooling system		x					**7-20**
Wheels and tires		x					**7-21**
Lights		x					**7-22**
Every 100 hours							
Every 250 hours							
Bucket grease fittings	x						**7-24**
Blade and stabilizers joints	x						**7-25**
Steering trunnion pins and cardan shaft	x						**7-26**
Floating axle locking cylinders contact faces	x						**7-27**
Engine air filter: outer element			x				**7-28**
Fuel tank				x			**7-29**
Every 500 hours							
Attachment	x						**7-30**
Fuel pre-filter					x		**7-32**
Fuel filters					x		**7-33**
Engine oil and filter					x		**7-34**
Front axle fluid level		x					**7-36**
Gearbox oil		x					**7-37**
Rear axle fluid level		x					**7-38**
Cab outside air filter					x		**7-39**
Cab air recirculation filter					x		**7-40**
Swing bearing	x						**7-41**
Tightening torques		x					**7-42**
Engine belts		x					**7-46**
Every 1000 hours							
Engine air filters					x		**7-47**
Front axle fluid						x	**7-48**
Gearbox oil						x	**7-50**
Rear axle fluid						x	**7-51**
Hydraulic oil return filters					x		**7-53**
Hydraulic reservoir breather					x		**7-54**
Pilot control filter					x		**7-55**
Swing reduction unit oil						x	**7-56**
Every 1500 hours							
Alternator drive belt					x		**7-57**
Air conditioning compressor drive belt					x		**7-58**

Wheels and tires

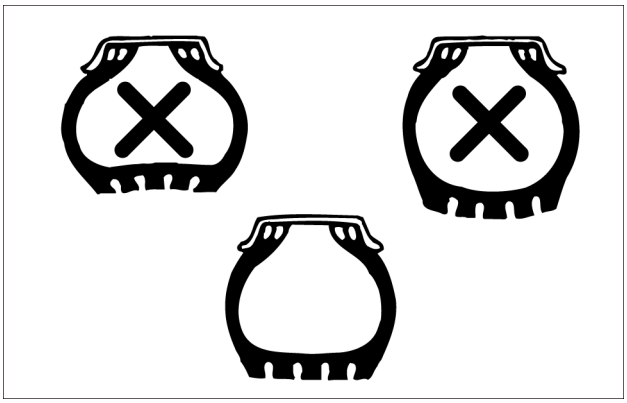
⚠ WARNING

Explosion hazard!
When inflating tires, use a clip-on air chuck with a gauge, remote valve, and hose long enough to allow you to stand to one side and NOT in front of or over the wheel assembly. Keep others out of the DANGER AREA. Never inflate a tire beyond the maximum allowable pressure printed on the tire. Failure to comply could result in death or serious injury.

W0059A

To check the tires pressure, proceed as follows:

- Park the machine on a level surface.
- Rest the bucket to the ground.
- Deactivate the Auto-Idle function, turn the engine speed throttle to LOW IDLE position, stop the engine, extract the starter key and place the safety lever in LOCK position.
- Check the tires pressure with a suitable inflating tool equipped with self-locking nozzle and pressure gauge.
- If the pressure results to be lower than expected, proceed to the inflation.



F5640N 1

NOTICE: *Inflate tires only with normal compressed air. Never use flammable gas: danger of explosions! Check pressure only with cold tires; when tires are warm, the pressure values detected are higher. Watch the tire and the pressure gauge of the inflating equipment permanently during the inflation and never exceed the prescribed tire pressures. Always inflate tires to the prescribed pressure:*
- excessive tires pressure means poor handling properties off the road and a risk of bursting tires;
- insufficient pressure means increased wear on the tires and inadequate stability of the machine.

NOTE: *Before inflating the tires, check the tires, rims and rim parts for damage, penetrated foreign objects and proper fitting.*

WX168

TYRES				
Type	Manufacturer	Type	Pressure	V (Max)
Twin	Mitas	10.00-20 PR 16 NB38	**7.5 bar** (**108.8 psi**)	**35 km/h** (**21.7 mph**)
	Bandenmarkt	Excavators 315/80 R 22.5	**8.5 bar** (**123.3 psi**)	**35 km/h** (**21.7 mph**)
Single	Mitas	600/40 - 22.5	**6.25 bar** (**90.6 psi**)	**35 km/h** (**21.7 mph**)
	Michelin	18 R19.5 XF	**7.5 bar** (**108.8 psi**)	**35 km/h** (**21.7 mph**)
	Alliance	620/40 - 22.5	**7.0 bar** (**101.5 psi**)	**35 km/h** (**21.7 mph**)

WX188

TYRES				
Type	Manufacturer	Type	Pressure	V (Max)
Twin	Mitas	10.00-20 PR 16 NB38	**7.5 bar** (**108.8 psi**)	**35 km/h** (**21.7 mph**)
	Mitas	11.00-20 PR 16 NB38	**7.25 bar** (**105 psi**)	**35 km/h** (**21.7 mph**)
Single	Mitas	600/40 - 22.5	**6.25 bar** (**90.6 psi**)	**35 km/h** (**21.7 mph**)
	Michelin	18 R22.5 XF	**7.5 bar** (**108.8 psi**)	**35 km/h** (**21.7 mph**)
	Alliance	620/40 - 22.5	**7.0 bar** (**101.5 psi**)	**35 km/h** (**21.7 mph**)

Triple articulation version

- Park the machine on a level surface.
- Rest the bucket to the ground.
- Deactivate the Auto-Idle function, turn the engine speed throttle to LOW IDLE position, stop the engine, extract the starter key and place the safety lever in LOCK position.
- Use a grease gun to pump grease of the prescribed type into the lubrication station indicated in the figures 1, 2, 3 and 4:
  9 grease fittings located between the boom cylinders + 4 grease fittings located at bottom of second boom.
  1A: Right boom cylinder bottom
  2A: Left first boom lower boss
  3A: Right first boom lower boss
  4A: Positioning cylinder bottom
  5A: Right boom cylinder rod
  6A: Left boom cylinder rod
  7A: Left first boom upper boss
  8A: Right first boom upper boss
  9A: Left boom cylinder bottom
  1B: Left second boom boss
  2B: Right second boom boss
  3B: Arm cylinder bottom
  4B: Position cylinder rod

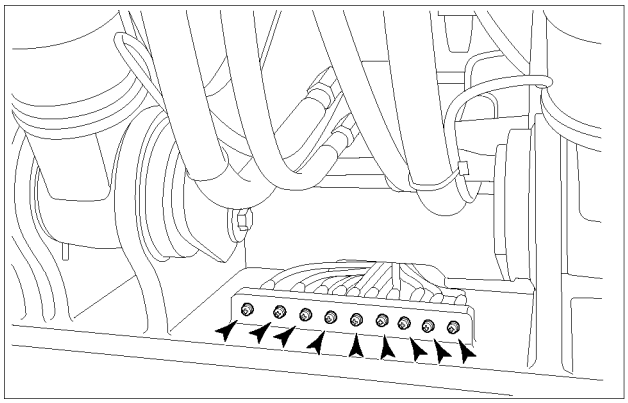
NOTE: *with triple articulation version machines, position the boom so that it becomes easy to reach the 4 grease fittings located on the arm.*

Quantity of grease:

- As necessary.

Recommended grease:

- CASE AKCELA PREMIUM EP-2



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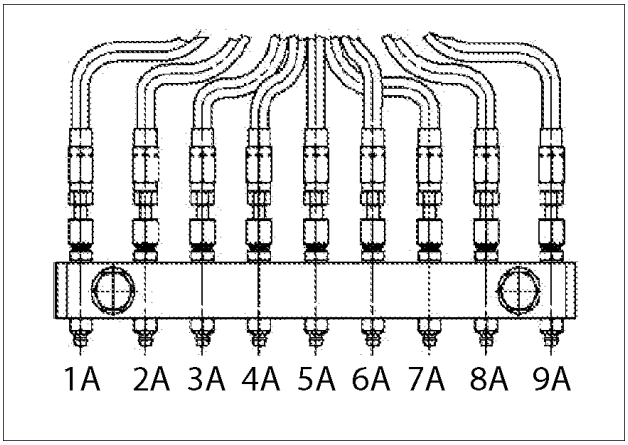

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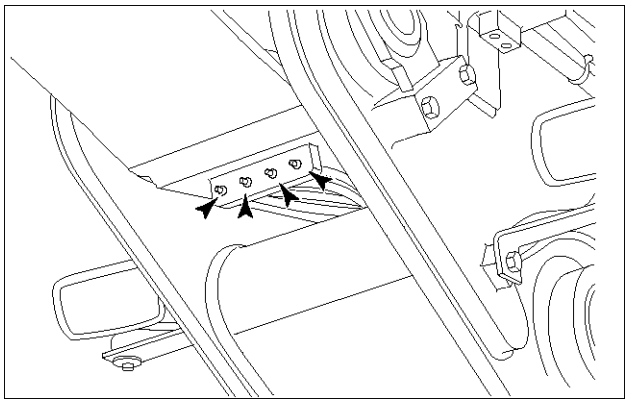

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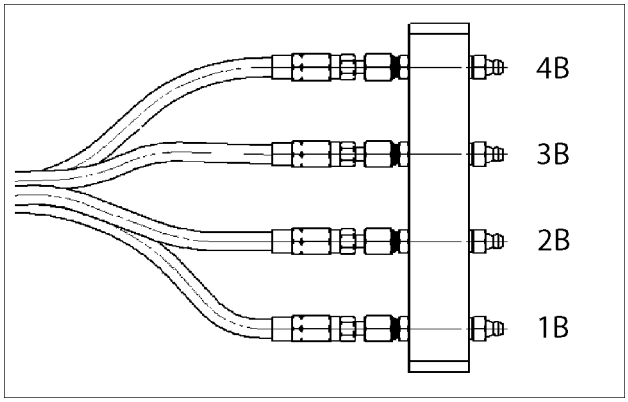
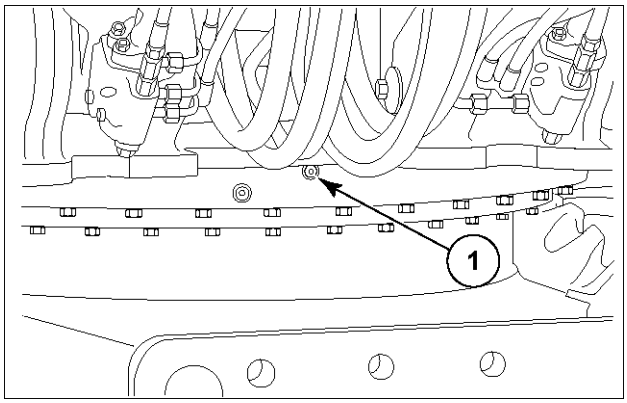


W0006N 6

Swing bearing

To grease the slewing ring, proceed as follows:

- Park the machine on a level surface.
- Rest the bucket to the ground.
- Deactivate the Auto-Idle function, turn the engine speed throttle to LOW IDLE position, stop the engine, extract the starter key and place the safety lever in LOCK position.
- Inject grease of the specified type through the grease fitting **(1)**.
- Start the engine, raise the bucket approximately **20 cm** (**7.9 in**) from the ground and swing the upper structure by **45 °**.
- Lower the bucket to the ground.
- Repeat the procedure above three times. Grease should be injected until it is seen coming out of the seals. Do not inject excess grease.



F00427N1 1

Quantity of grease:

- As necessary.

Recommended grease:

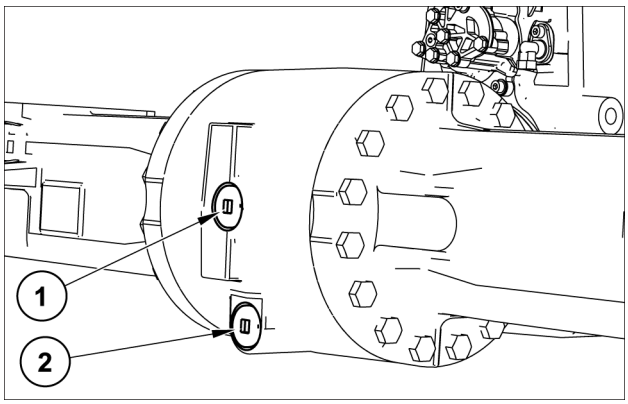
- **CASE AKCELA MOLY GREASE**

Rear axle fluid

Differential - oil replacement

To change the differential oil, proceed as follows:

- Park the machine on a level surface.
- Rest the bucket to the ground.
- Deactivate the Auto-Idle function, turn the engine speed throttle to LOW IDLE position, stop the engine, extract the starter key and place the safety lever in LOCK position.
- Clean the area around screw plugs **(1)** and **(2)**.
- Place a container under the screw plug **(2)** to collect old oil.
- Unscrew the screw plug **(1)** slowly, until the inner pressure is completely released, then completely unscrew the plug **(1)**.
- Unscrew the screw plug **(2)**.
- Oil flows out of the screw plug **(2)**.
- Provide screw plug **(2)** with a new O-ring and mount it. (Tightening torque = **50 N·m** (**36.9 lb ft**))
- Screw up the screw plug **(2)**.
- Fill new oil through the screw plug **(1)** hole. The oil level must be flush with the hole lower edge.
- Provide screw plug **(1)** with a new O-ring and mount it. (Tightening torque = **50 N·m** (**36.9 lb ft**))



F00393N 1

Quantity of oil:

- **12 L** (**2.6 UK gal**) for WX168 models.
- **12 L** (**2.6 UK gal**) for WX188 models with **2.5 m** (**8.2 ft**) axle.
- **12.4 L** (**2.7 UK gal**) for WX188 models with **2.75 m** (**9.02 ft**) axle.

Recommended oil:

- **CASE AKCELA TRANSAXLE FLUID 80W-140**

Engine coolant

Draining of coolant

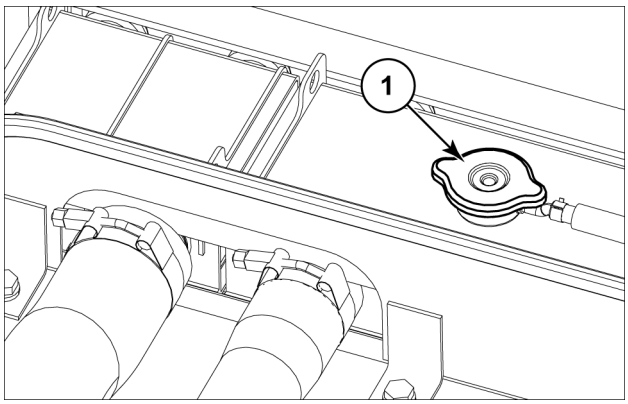
⚠ CAUTION

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

Drain the engine coolant operating as follows:

- Position the machine on a flat surface with the turret swung **90 °** to facilitate the access.
- Deactivate the Auto-Idle function, turn the engine speed throttle to LOW IDLE position, stop the engine, extract the starter key and place the safety lever in LOCK position.
- Wait for the machine to cool off then open the engine hood and the radiator and filter compartment doors, locking them in open position.
- Loosen slightly radiator cap **(1)** to bleed completely the pressure inside the radiator, then loosen the cap and remove it.
- Get under the turret and remove the panel **(2)** under the radiator.
- Open draining valve **(3)** and let the coolant drain into a container of appropriate capacity. Once the operation is over, retighten the valve.
- Inspect carefully the sleeves checking that they are trouble free (replace them if required) and tighten the clamps if slacken. Check the there are no leakages from the radiator, damages or accumulation of dirt.



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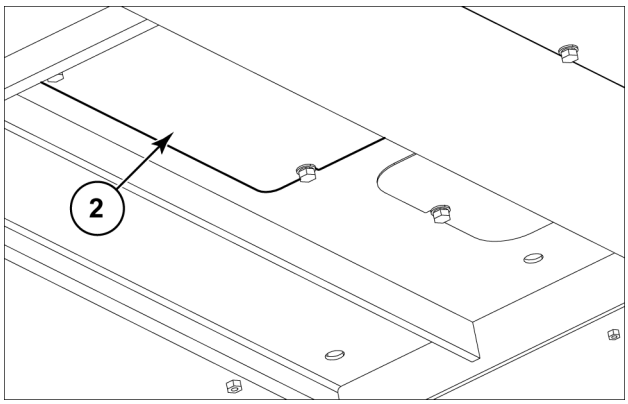
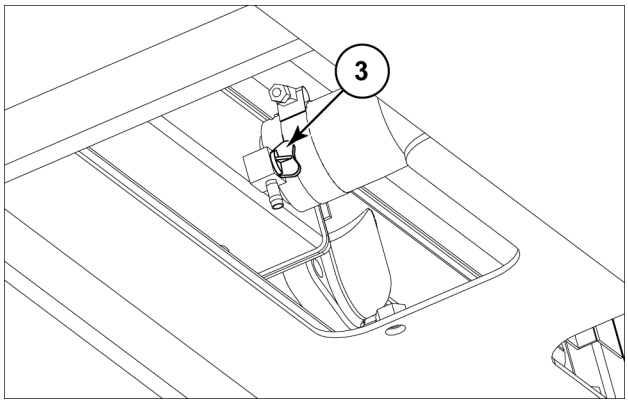


NHC0353 2



NHC0285A 3

Removal from storage

⚠ WARNING

Unexpected machine movement!
Before starting the engine, make sure all controls are in the neutral position.
Failure to comply could result in death or serious injury.

W0311A

⚠ 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. Drain the fuel tank, the pre-filter and the fuel filter, replace the filter elements if necessary.
2. Fill the fuel tank with suitable fuel.
3. Install the batteries or reconnect the cable to the negative (-) terminal.
4. Grease the machine thoroughly.
5. Check the condition of the fan drive belt and replace it if necessary.
6. Check the condition of the air conditioning drive belt and replace it if necessary.
7. Check the cooling system level and add more coolant if necessary.
8. Check the engine oil level and add more oil if necessary.
9. Check the hydraulic fluid level and add more fluid if necessary.
10. Check the front steering and rear rigid axles oil level and add more oil if necessary.
11. Check swing gear oil level and add more oil if necessary.
12. Clean the cylinder rods.
13. Unplug the air filter inlet and the exhaust pipe.
14. Check the tire pressure.
15. Remove the "Do not operate" tag and start the engine, following the starting up procedure.
16. Check the operation of the braking and steering system.
17. Check all the indicators and lamps carefully.

NOTICE: *check the machine and the engine for leaks or for any parts that are broken, defective or missing.*

Fault code	Function involved	Description
9851	Attachment (Dipper)	Control failure on pilot valve. Machine in safe state. Attachment hydraulic not available.
9856	Attachment (Positioning cylinder)	Electrical failure on pilot valve. Limited Positioning cylinder functionality.
9857		
9861		
9862		
9866	Attachment (Positioning cylinder)	Control failure on pilot valve. Attachment hydraulic not available.
9671	Attachment (Breaker shears)	Electrical failure on pilot valve. Limited Breaker shears functionality.
9872		
9876		
9877		
9881	Attachment (Breaker shears)	Control failure on pilot valve. Attachment hydraulic not available.
9886	Attachment (Low flow secondary)	Electrical failure on pilot valve. Limited Low flow functionality.
9887		
9891		
9892		
9896	Attachment (Low flow secondary)	Control failure on pilot valve. Attachment hydraulic not available.
9901	Attachment/Hammer (option)	Electrical failure on valve. Hammer function not available.
9902		
9911	Attachment/Grab rotation (option)	Electrical failure on valve. Limited Grab rotation functionality.
9912		
9916		
9917		
9936	Attachment/Flow circulation (option)	Electrical failure on valve. Flow circulation (option) not available.
9937		
9938		
9950	Calibration main valve	Calibration with wrong machine number.
9951	Calibration main valve	Calibration not completed.
9952	Calibration main valve	Calibration of main valve not complete. Reduced machine performance.
9954	Calibration main valve	Calibration of main pump not complete Reduced machine performance
9955	Calibration main valve	Calibration not complete. Reduced swing performance.
9959	Calibration main valve	Calibration not complete. Reduced auxiliaries attachment performance.
9960		
9961		
9962	Calibration main valve	Calibration of main pump not complete. Reduced machine performance.
9963		
9964		
9965		
9966	Calibration main valve	Calibration of main pump not complete. Reduced boom attachment performance.
9967	Calibration main valve	Calibration not complete. Reduced dipper attachment performance.
9970	Calibration main valve	Calibration not complete. Reduced swing performance.
9971		
9972		
9973		
9974		
9975		
9976		
9977		
9978		
9979		
9980		

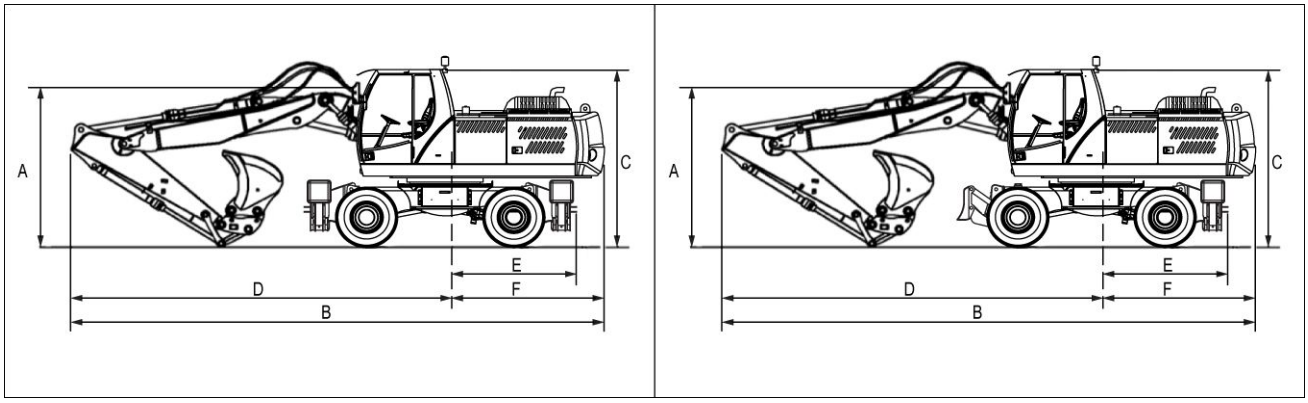
Environment and ecology

Before carrying out any maintenance operation on this machine and before disposing of used fluids or lubricants, always think of the environment. Never throw oil or fluid on the ground and never place it in leaking receptacles.

Consult your local ecological recycling center or your CASE CONSTRUCTION Dealer to obtain information on the correct method of disposing of these lubricants.

The following are recommendations which may be of assistance:

- Become acquainted with and ensure that you understand the relative legislation applicable to your country.
- Where no legislation exists, obtain information from suppliers of oils, filters, batteries, fuels, antifreeze, cleaning agents, etc., with regard to their effect on man and nature and how to safely store, use and dispose of these substances.
- Local Environmental Agency will, in many cases, be able to help you as well.



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Front and rear stabilizers				Front blade and rear stabilizers			
Dipper (**mm**)	2200	2600	3100	Dipper (**mm**)	2200	2600	3100
A	2881	2831	3491	A	2881	2831	3437
A 1)	2881	2831	3368	A 1)	2881	2831	3280
A 2)	2881	2831	3108	A 2)	2881	2831	3108
A 3)	2799	2774	2850	A 3)	2799	2774	2850
B	8918	8844	8777	B	8918	8844	8784
B 1)	8918	8844	8793	B 1)	8918	8844	8809
B 2)	8918	8844	8809	B 2)	8918	8844	8806
B 3)	8894	8834	8840	B 3)	8894	8834	8840
C	3200			C	3200		
D	6468	6394	6327	D	6468	6394	6334
D 1)	6468	6394	6343	D 1)	6468	6394	6359
D 2)	6468	6394	6359	D 2)	6468	6394	6356
D 3)	6444	6384	6390	D 3)	6444	6384	6390
E	2450			E	2450		
F	2280			F	2280		

NOTE: 1 mm (0.039 in)

1) With bucket only

2) With quick coupler only

3) Without quick coupler and bucket

Maximum machine width: **2550 mm** (**100.4 in**) (Germany/Italy) - **2750 mm** (**108.3 in**) (Germany)

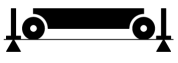
Dimensions measured with MITAS 11.00-20 twin tires.

SAE Capacity	Width	Mass															
			Arm length			Arm length			Arm length			Arm length			Arm length		
			2.1 m	**2.4 5 m**	**2.9 5 m**	**2.1 m**	**2.4 5 m**	**2.9 5 m**	**2.1 m**	**2.4 5 m**	**2.9 5 m**	**2.1 m**	**2.4 5 m**	**2.9 5 m**	**2.2 m**	**2.6 m**	**3.1 m**
0.456 m³ (0.60 yd³) (*)	**1500 mm (59 in)**	**644 kg (1420 lb)**	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
0.551 m³ (0.72 yd³) (*)	**1800 mm (71 in)**	**700 kg (1543 lb)**	●	●	○	●	●	●	●	●	●	●	●	●	●	●	●
0.614 m³ (0.80 yd³) (*)	**2200 mm (87 in)**	**739 kg (1629 lb)**	●	●	○	●	●	●	●	●	●	●	●	●	●	●	●
0.678 m³ (0.89 yd³) (*)	**2200 mm (87 in)**	**804 kg (1773 lb)**	○	○	▲	●	●	○	●	●	●	●	●	●	●	●	●
0.741 m³ (0.97 yd³) (*)	**2400 mm (94 in)**	**836 kg (1843 lb)**	○	▲	■	●	○	○	●	●	●	●	●	●	●	●	●
0.54 m³ (0.71 yd³) (**)	**1830 mm (72 in)**	**495 kg (1091 lb)**	○	○	▲	●	●	○	●	●	●	●	●	●	●	●	●
0.54 m³ (0.71 yd³) (**)	**1830 mm (72 in)**	**624 kg (1376 lb)**	○	▲	▲	●	○	▲	●	●	●	●	●	●	●	●	●

(*) Bucket version: Ditch Cleaning - 90° Tilt

(**) Bucket version: Ditch Cleaning

● Density 1.8 t/m^3 and higher
○ Density 1.5 t/m^3 to 1.8 t/m^3
▲ Density 1.2 t/m^3 to 1.5 t/m^3
■ Density up 1.2 t/m^3

SAE Capacity	Width	Mass															
			Arm length			Arm length			Arm length			Arm length			Arm length		
			2.2 m	**2.6 m**	**3.1 m**	**2.2 m**	**2.6 m**	**3.1 m**	**2.2 m**	**2.6 m**	**3.1 m**	**2.2 m**	**2.6 m**	**3.1 m**	**2.2 m**	**2.6 m**	**3.1 m**
0.24 m³ (0.31 yd³)	**470 mm (19 in)**	**376 kg (829 lb)**	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
0.36 m³ (0.47 yd³)	**600 mm (24 in)**	**415 kg (915 lb)**	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
0.50 m³ (0.65 yd³)	**750 mm (30 in)**	**463 kg (1021 lb)**	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
0.62 m³ (0.81 yd³)	**900 mm (35 in)**	**502 kg (1107 lb)**	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
0.70 m³ (0.92 yd³)	**1000 mm (39 in)**	**532 kg (1173 lb)**	●	●	○	●	●	●	●	●	●	●	●	●	●	●	●
0.78 m³ (1.02 yd³)	**1100 mm (43 in)**	**562 kg (1239 lb)**	●	●	○	●	●	●	●	●	●	●	●	●	●	●	●
0.87 m³ (1.14 yd³)	**1200 mm (47 in)**	**593 kg (1307 lb)**	●	○	▲	●	●	○	●	●	○	●	●	○	●	●	○
1.00 m³ (1.31 yd³)	**1350 mm (53 in)**	**659 kg (1453 lb)**	○	▲	■	●	○	▲	●	●	▲	●	●	▲	●	●	▲

Bucket version: Heavy Duty

● Density 1.8 t/m^3 and higher
○ Density 1.5 t/m^3 to 1.8 t/m^3
▲ Density 1.2 t/m^3 to 1.5 t/m^3
■ Density up 1.2 t/m^3

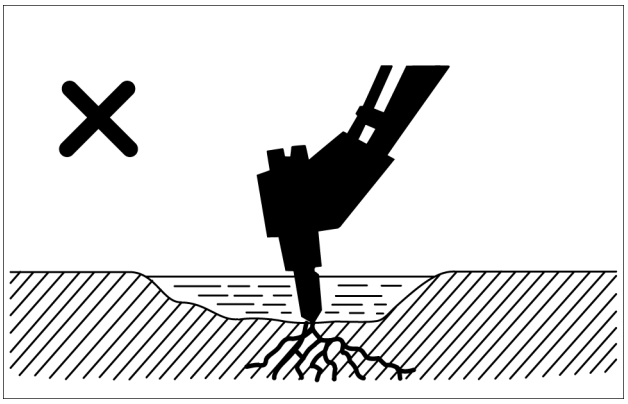
Hydraulic Hammer

NOTE: *Select a appropriate hammer model that meets the requirements of stability, flow rate and pressure of the excavator hydraulic system. Contact your authorized Dealer to select a type for hammer suitable for this machine.*

Safety precautions and operating procedures

F34131N1 1

Before starting working, check that the hammer is securely fastened to the working equipment and that the hydraulic lines are correctly connected.
The hazard zone of the hydraulic hammer must be kept clear of all persons.
Dangers caused by rock fragments which could be propelled in the working area.
Close the front window of the machine before starting up the hammer.
Install the protective grating.
Wear ear protectors.
Avoid striking objects violently with the hydraulic hammer with the hazard of being damaged or to damage the attachment and the upper structure.
Before activating the hammer always lower it slowly until the tip of the chisel touches the object to strike.
Do not use the hydraulic hammer and/or the slewing action, to move objects because this could damage the working attachment.
Avoid working with excavator cylinders completely extended (fully extended or fully retracted) so as not to damage the attachment structure or the cylinders.
Stop working if hydraulic hoses are bent abnormally.



F34165N1 2

Do not operate the hydraulic hammer in water. This use may originate rust or damage seals and components of the hydraulic system.
Do not use the hydraulic hammer for lifting of moving objects; the excavator may overturn and/or the hydraulic hammer could get damaged.
While working with the excavator pay attention not to strike the boom with the hydraulic hammer.
Do not use the hydraulic hammer when the dipper is positioned vertically; excessive vibrations to dipper cylinder may generate oil leaks.

Low flow operation

The operator can control the “Low flow” optional function to proportionally change the delivery to the auxiliary attachment in use (e.g.: cutter, shears, etc.).

The “Low flow” system is controlled by means of the slider **(1)**:

by moving the slider to the right, delivery is increased on the right side of the “Low flow” valve, from value 0 to a defined value, through the position of the slider;

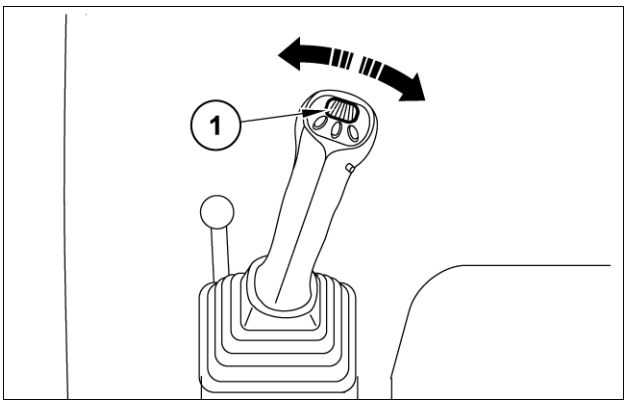
by moving the slider to the left, delivery is increased on the left side of the “Low flow” valve, from value 0 to a defined value, through the position of the slider. By releasing the slider to neutral position, the operation of the auxiliary equipment is stopped.

The “Low flow” system operates ONLY with the safety lever in active position.

At the beginning of a job, the first time the safety lever is lowered, the display shows for 10 seconds the menu **(A)** for the selection of 4 possible values:

- Low Flow 1: 75%
- Low Flow 2: 100%
- Low Flow 3: 50%
- Low Flow 4: 25%

NOTE: *these values represent the percentage of maximum values of flow. They are changeable with the same procedure as described in previous pages.*



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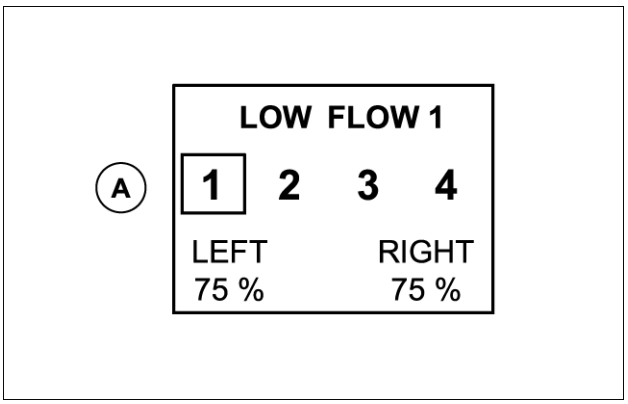
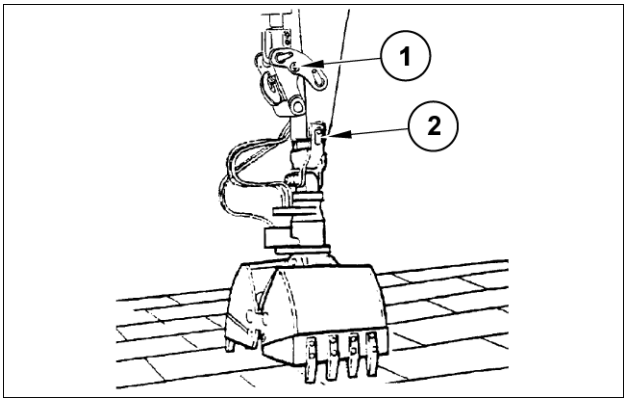


F44214N 2

Clean and grease pin and bushes.

Drive the machine towards the clamshell.

Insert dipper into grab bearing, push bearing pin **(2)** home and secure it.



F00019N 3

Shut off engine and relieve hydraulic pressure from clamshell hoses.

Clean quick couplers on clamshell and dipper.

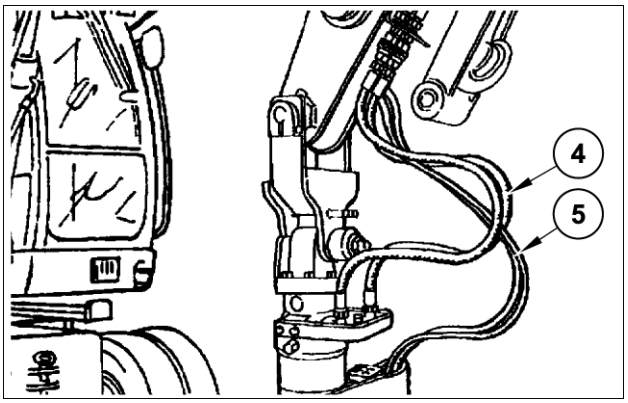
Connect the hydraulic hoses of the clamshell cylinder **(4)** and of the clamshell rotation function **(5)**.

Check that quick couplers are perfectly engaged.

Grease all nipples on clamshell and gearing of clamshell rotating mechanism.

Start the engine and lift the clamshell from the ground.

Bleed clamshell hydraulic system by opening and closing the clamshell repeatedly and by turning it clockwise and counterclockwise.



F42765N 4

Clamshell disassembly

Completely open clamshell valves and rest the clamshell on the ground.

Shut off the engine, turn the starter switch key to position “I”.

Relieve the pressure from the hydraulic system.

Turn the starter switch key to position “0”.

Disconnect hydraulic hoses **(4)** and **(5)** and quick couplers.

Protect quick couplers of clamshell and dipper from dirt by applying the dust cups.

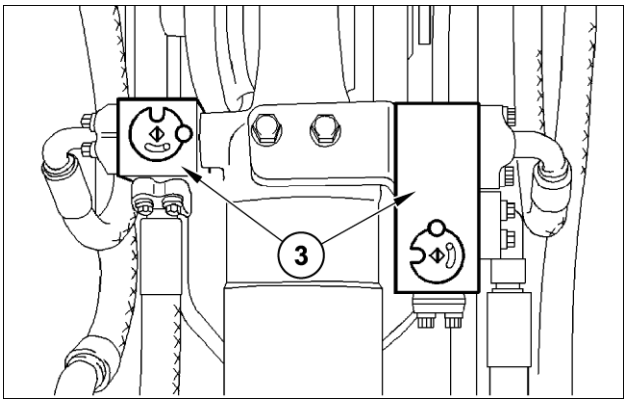
Unscrew the pin’s mechanical lock **(2)** and extract the pin.

Start the engine.

Disassemble the lock pin for the bucket link **(1)**.

To switch over the working attachment from clamshell to bucket: set the marker grooves on the valves squares **(3)** as shown in the picture.

NOTE: *the symbols of cylinder are shown into the grooves.*



F44132N 5

Hose burst control valve

The break protection valves **(1)**, **(2)** and **(3)** prevent the working attachment from lowering in case of a hydraulic hose breaking on the head side of the boom cylinders.

The hydraulic connection of boom cylinder head is cut out, so that hydraulic oil can flow back from this point only if the “boom lowering” control is activated.

Also the upper and dipper cylinders can be equipped with pipe break protection valves.

If hydraulic pipe breaks, carry out the following operations:

Set hydraulic control lever for “Boom lowering”, or the pedal for “Boom lowering” to idle position.

Alert people nearby with the horn.

The working attachment area with lifted load has to be ensured so as nobody can stay under the working attachment or under the load or in proximity of the hydraulic hose broken.

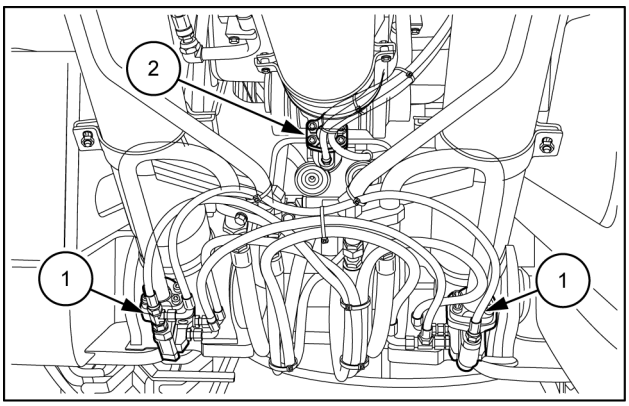
When the working attachment and the load are lowered to the ground, oil comes out from the broken spot of the pipe.

Place the working equipment and the load carefully on the ground.

Replace the broken hydraulic hose.

Only after replacement, resume the work.

Escaping hydraulic oil and possible rags have to be discarded without polluting the environment.



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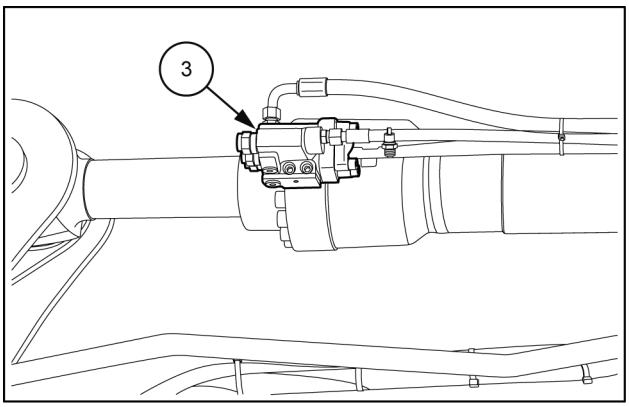

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