WEAM000704

Operation & Maintenance Manual

WB97S-2

BACKHOE-LOADER

SERIAL NUMBER

WB97S-2 97SF11205 and up

WARNING

Unsafe use of this machine may cause serious injury or death. Operators and maintenance personnel must read this manual before operating or maintaining this machine.

This manual should be kept inside the cab for reference and periodically reviewed by all personnel who will come into contact with the machine.

KOMATSU

Utility

1.4.9 SERIAL NUMBERS AND DEALER'S ADDRESS

Machine n. _____ Model _____

Engine n. _____

Front axle n. _____

Rear axle n. _____

Transmission n. _____

Cab n. _____

Canopy n. _____

Dealer:

_____

_____

_____

_____

Address: _____

_____

_____ Tel. _____

Person to contact: _____

NOTES: _____

SAFETY AND ACCIDENT PREVENTION

2.2.4 UNAUTHORIZED MODIFICATIONS

- Any modification made without the authorization of Komatsu Utility can involve hazards.
- Before making a modification, consult your Komatsu Utility Dealer. Komatsu Utility declines any responsibility for injuries or damage caused by unauthorized modifications.

2.2.5 LEAVING THE OPERATOR'S SEAT

- When leaving the operator's seat, even if temporarily, make sure that the machine is in a safe position. (See "2.4.11 PARKING THE MACHINE").
- Before leaving the operator's seat, carry out the following operations in the sequence indicated below:

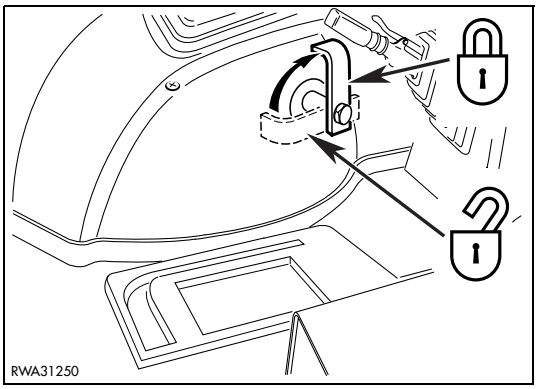
  1 - Rest the equipment onto the ground.

  2 - Connect the safety devices of the controls.

  3 - Apply the parking brake.

  4 - Shift the reversing gear lever to the neutral position.

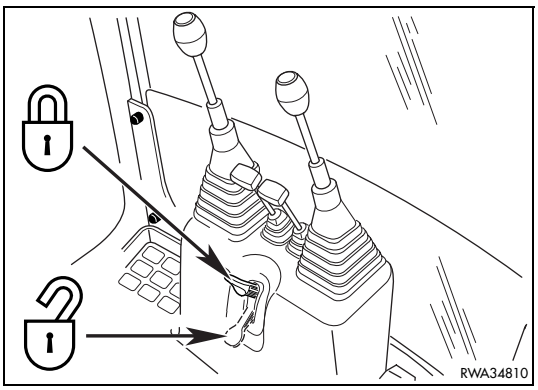
  5 - Stop the engine.

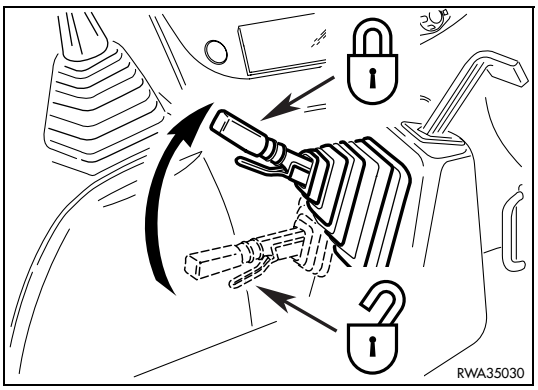


IMPORTANT

- **If the machine is equipped with backhoe servo controls, before leaving the operator seat always engage the control locking safety device by pressing the relevant switch, see "3.3.5.2 MACHINE CONTROLS (Version with servo controls)", pos. 26.**

If you have to go so far away that you will not be able to see the machine, extract the ignition key.





2.4.7 VISIBILITY

- Switch on the road or working lights as soon as visibility decreases.
- If visibility decreases due to mist, smoke or heavy rain, stop the machine in a safe position and wait for the weather to improve until visibility becomes acceptable.

2.4.8 WORKING ON ICY OR SNOW-COVERED SURFACES

- If the ground is icy or covered with snow, the response of the machine to the movements of the steering wheel may not be precise.
  To limit the risks deriving from reduced directionality, proceed as follows:
  1 - Engage the four-wheel drive.
  2 - Travel using the accelerator smoothly and gradually.
  3 - Brake smoothly and only after having slowed down by using the engine deceleration as much as possible.
  4 - Avoid any sudden braking, rapid acceleration and abrupt steering with reduced steering radius.
- If the machine is used to clear snow or as snowplough on roads (installing the specific optional equipment and even chains, if necessary), be careful to the road shoulders and to any object/obstacle buried in the snow (way-side posts, milestones, signs just above the asphalt, etc.).

2.4.9 PREVENTING DAMAGE CAUSED BY THE WORK EQUIPMENT

- When working in tunnels, galleries, under electric cables or other ducts (air, telephone lines) and wherever the height is limited, proceed with the greatest care to prevent the bucket or arms and the backhoe bucket from causing any damage.

2.4.10 WORKING ON LOOSE GROUND

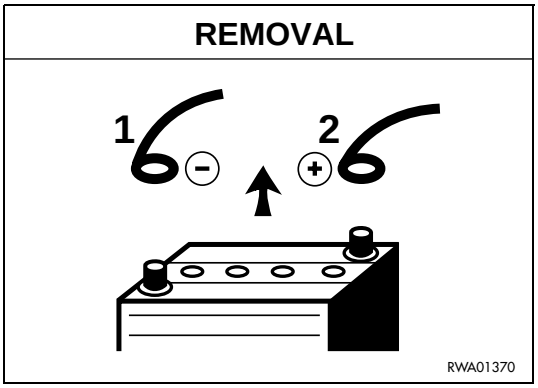
- Avoid operating the machine too close to the edge of cliffs, overhangs and deep ditches.
  These areas may collapse, making the machine fall down or tip over and this could result in serious injuries or death.
  Remember that after heavy rain or earthquakes these dangerous conditions usually get worse.
- The earth laid near ditches is loose and can easily collapse due to the weight or vibrations of the machine.
  Be extremely careful: always close the cab doors and fasten the safety belt.

2.8.13 PRECAUTIONS CONCERNING THE BATTERY AND THE ALTERNATOR

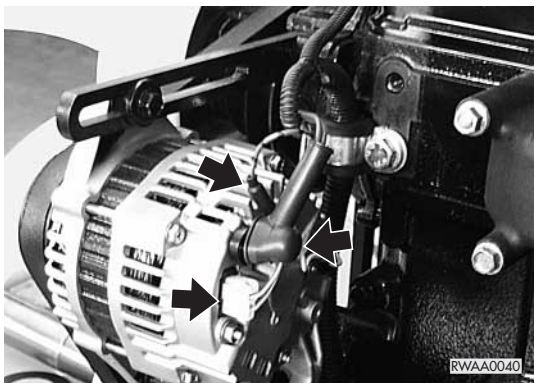
- When repairing the electrical system, disconnet the battery in order to stop the flow of current.

IMPORTANT

- **Disconnect first the negative earth cable (-) and then the positive cable (+).**
  At the end of the operation, reconnect first the positive cable (+) and then the negative cable (-).

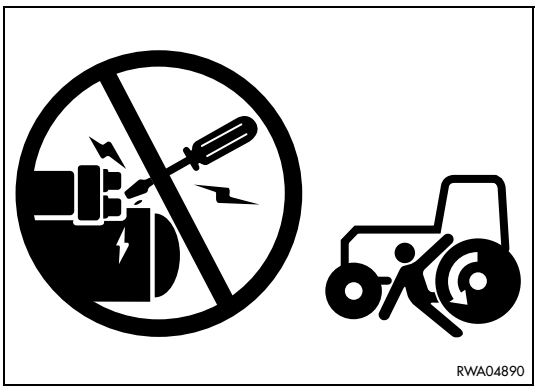


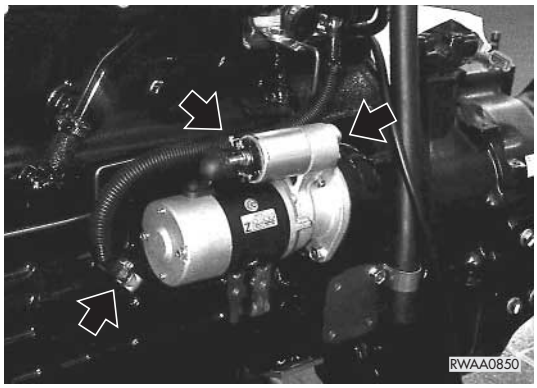
- If electrical welding operations are to be carried out on the machine, it is necessary to disconnect the battery and also the alternator.



2.8.14 PRECAUTIONS CONCERNING THE STARTER

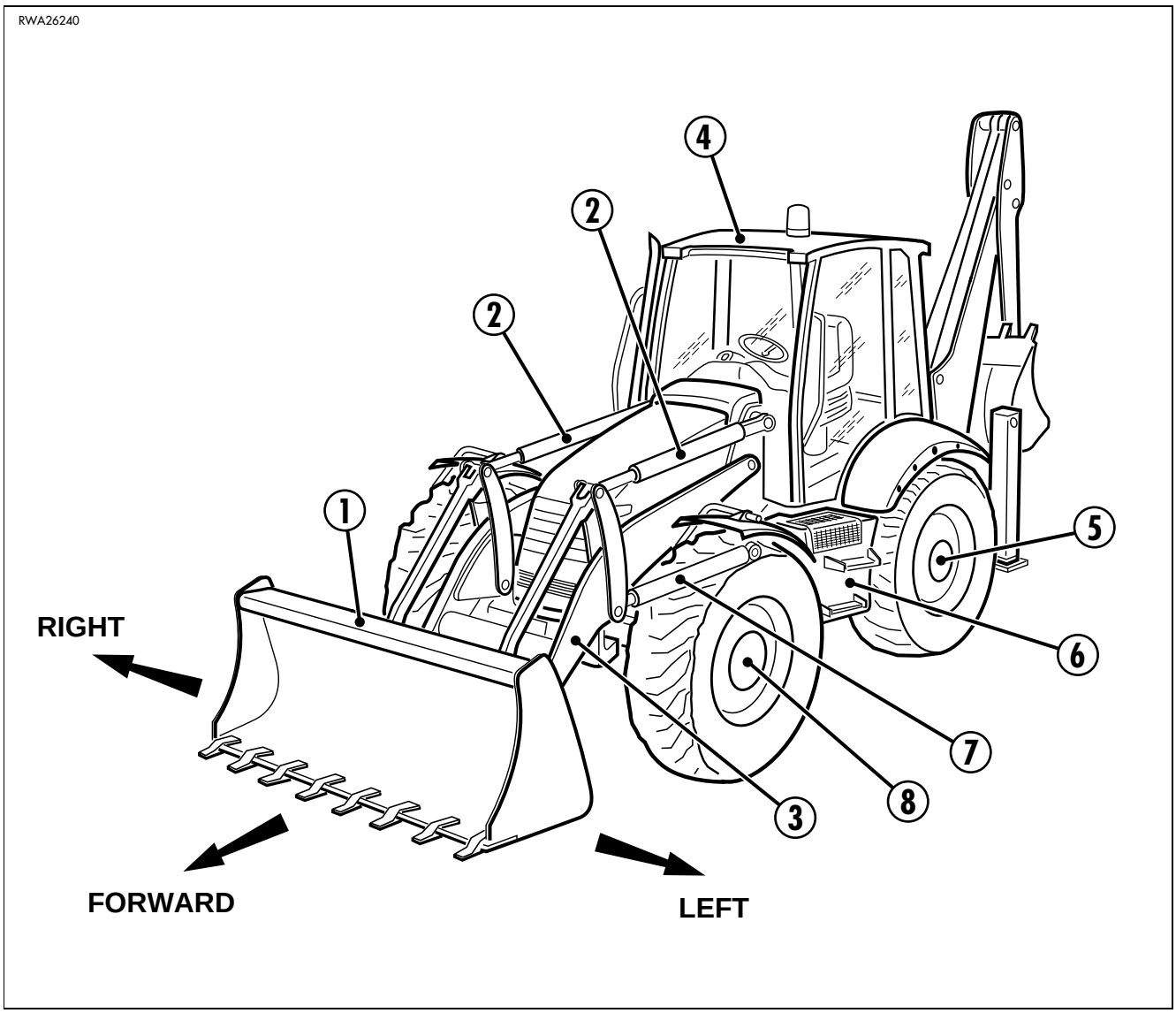
- Start the engine only when correctly seated in the driving position.
- Do not attempt to start the engine by causing a short-circuit with the terminals of the starter. This may cause fires, serious injuries and even death in case of sudden or accidental movements of the machine.





3.2 GENERAL VIEWS

3.2.1 FRONT GENERAL VIEW



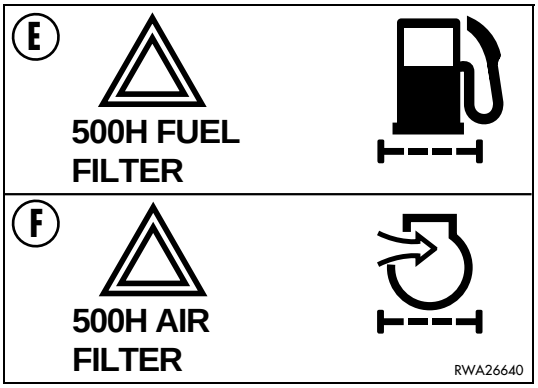
1 - Front bucket
2 - Bucket dumping cylinder
3 - Bucket lifting arm
4 - Cab
5 - Rear axle
6 - Fuel tank
7 - Lifting cylinder
8 - Front axle

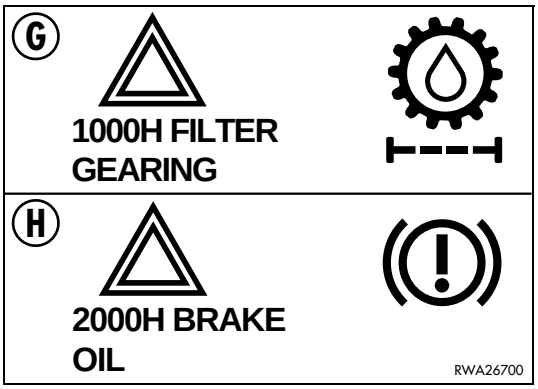
- Every 1000 hours:
  - Transmission filter (Fig. G)
- Every 2000 hours:
  - Brake oil (Fig. H)
  - Coolant (Fig. I)
  - Hydraulic oil (Fig. L).

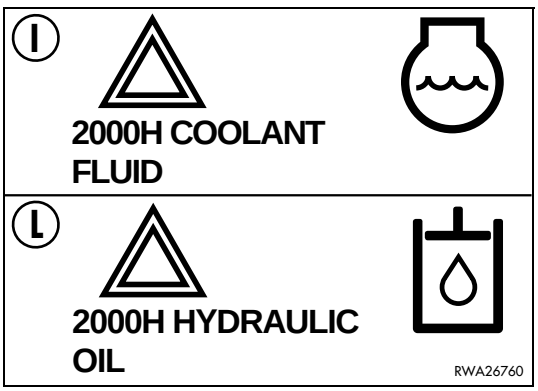
To return to the speedometer, press the CHECK button (1) again. Once the required maintenance operation has been carried out, it is possible to reset the partial service hours for that specific maintenance operation, by showing the operation on the display (17) and keeping the SERVICE button (2) pressed for approximately 5 seconds.
The partial number of hours is thus cancelled and the count starts again, for each maintenance function, from the moment in which the reset of the alarm is carried out.

IMPORTANT

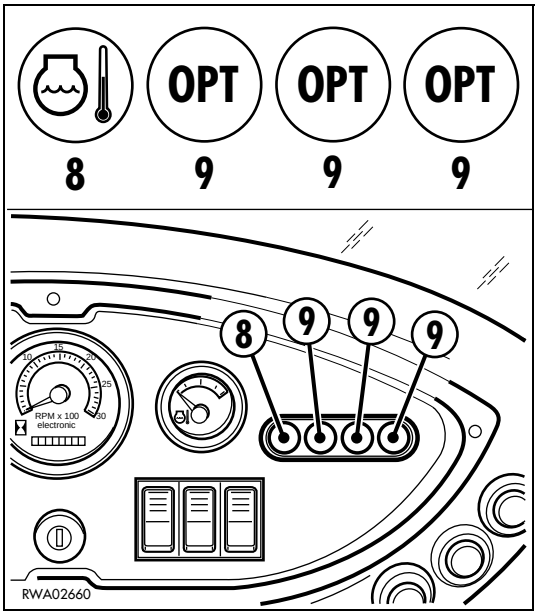
- **Set the service hours to zero only after performing the required maintenance operation.**
- **The maintenance alarms must be accompanied by the flashing of the danger symbol (⚠).**







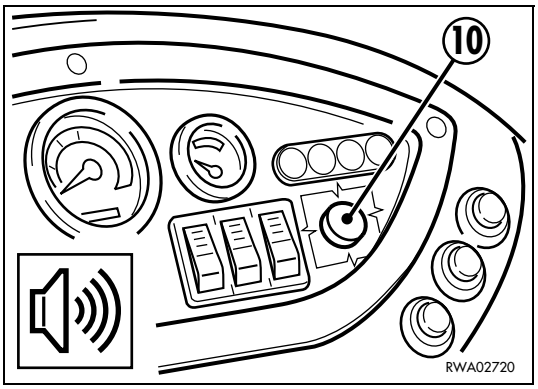
8 - ENGINE COOLANT TEMPERATURE WARNING LIGHT



This warning light comes on and the acoustic alarm sounds when the engine coolant temperature exceeds the maximum value allowed; in this case, lower the engine speed to idling (approximately 1200 rpm) and wait until it stops. When the warning light (8) comes on, the operator is warned about the inconvenience even through the electronic display positioned on the front dashboard.
See “3.3.1 FRONT INSTRUMENTS” pos. 17.

9 - WARNING LIGHTS AVAILABLE FOR OPTIONAL EQUIPMENT

10 - ACOUSTIC ALARM



This alarm starts when the circuits are energized by means of the ignition key (by turning it to position «**I**») and is automatically disconnected when the engine starts.
The sounding of the continuous alarm during the use of the machine signals the following:

- Insufficient engine oil pressure.
- Overheating of the engine cooling circuit.
- Overheating of the transmission oil.
- Faulty alternator or worn belt.
- Air cleaner clogged.
- Incorrect position of the seat for travelling.

The sounding of the intermittent alarm during the use of the machine signals the following:

- Real wheels misaligned either with machine moving and with machine at rest.
- Steering solenoid valve malfunction.
- Incorrect gear selection with respect to the selected steering mode.

☞ **IMPORTANT**

- **Before using the machine, make sure that the acoustic alarm (10) functions perfectly. If the alarm doesn’t work, have the machine checked by your Komatsu Utility Dealer.**

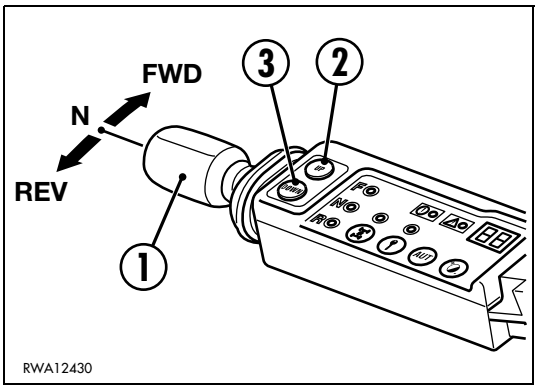
1 - REVERSING GEAR-GEARSHIFT LEVER

DANGER

- **Since no mechanical connection is provided between the gearshift and the engine, if the machine is parked on a slope it can move freely even with engaged gears; for this reason, always apply the parking brake, in order to avoid any damage.**
- **The machine is equipped with an acoustic alarm that is activated if the operator, with the engine running, moves the reversing gear lever (1) to position FWD or REV with the seat rotated in any position different from the correct driving position.**
  This is a danger signal, since it is absolutely forbidden to carry out any movement with the machine while working with the backhoe equipment or in any case with the seat rotated by 180° with respect to the regular driving position. Remember that the operator must carry out any movement of the machine while seated in the correct driving position, with locked seat and fastened safety belt.
- **Disconnect the connector of the reversing gear-gearshift lever unit before carrying out electric welding operations on the machine.**
  Non-compliance with this rule may even result in deadly accidents, since the gear storage, gear selection and travel direction selection microcircuits may be irreversibly damaged.

IMPORTANT

- **The engine can be started only with the gearshift lever in neutral position (N).**
- **If the operator deems it necessary, the machine may also be equipped with an acoustic alarm for movements in reverse.**
  This device can be installed on an apposite area on the rear part of the frame (see 2.4.3 CHECKS FOR TRAVELLING IN REVERSE) and before carrying out any movement in reverse it is recommended to make sure that this device is functioning perfectly.
  To check the functionality of this acoustic alarm, proceed as follows:
  - Start the machine (see "3.6.2 STARTING THE ENGINE")
  - Press the brake pedals.
  - Shift the reversing gear lever (1) to the reverse position R.
  If the alarm doesn't work, have the machine checked by your Komatsu Utility Dealer.

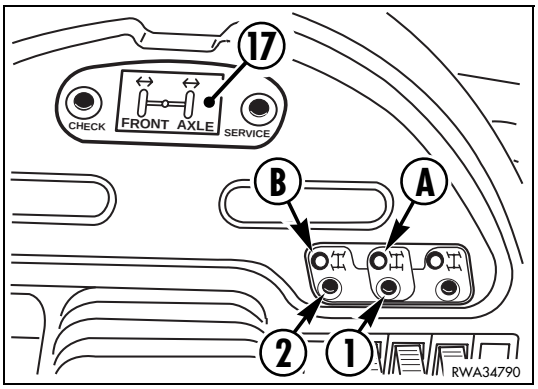


This is a combined control that serves either to shift gears and to reverse.
The gears are engaged by means of the push buttons UP (2) and DOWN (3).
The travelling direction (forward or reverse) is selected by means of the lever (1).
The normal control of the gearshift is ensured by the semiautomatic logic system (SA), with possibility to select the automatic logic system (AU).
The gearshift control is also provided with a safety code to prevent theft.

SWITCHING OVER FROM ONE STEERING MODE TO THE OTHER

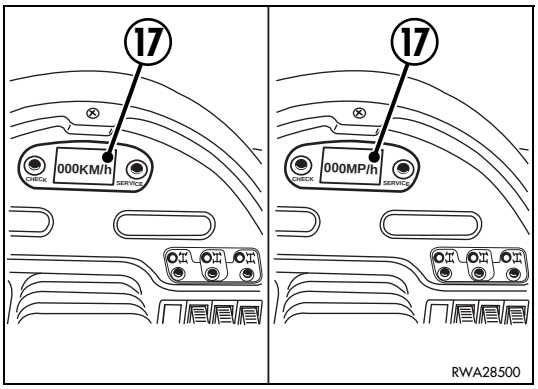
- **SWITCHING OVER FROM TWO-WHEEL STEERING TO ALL-WHEEL STEERING**

Press buttons (1) and (2) at the same time and turn the steering wheel clockwise or anticlockwise to align the front wheels.
The misalignment of the front wheels is signalled by the acoustic alarm, which will stop once the wheels are correctly aligned.
The green led (A) will go out and the red led (B) will come on at the same time. During the alignment phase the symbol (↔ ↔) will appear on the display (17) positioned on the front dashboard and will go out as soon as the front wheels are aligned. At this point the speedometer “Km/h or MP/h” will appear on the display (17).



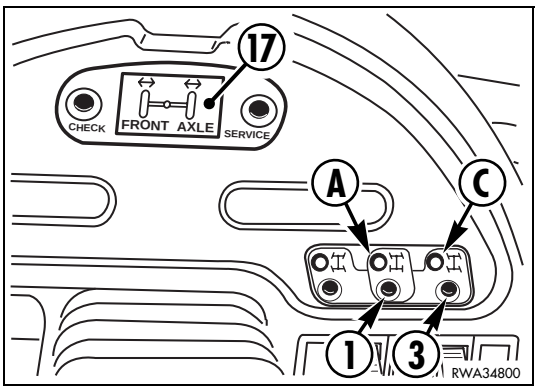
☞ **IMPORTANT**

- **Changing over from 2-wheel steering to all-wheel steering is possible only with 1st, 2nd and 3rd gear engaged, with the machine either in operation or at rest, provided that the speed does not exceed 13 km/h (8MP/h).**



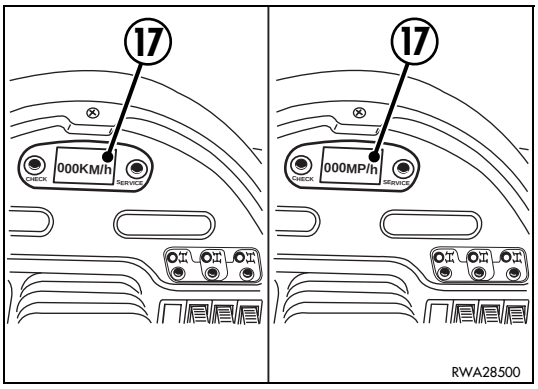
- **SWITCHING OVER FROM TWO-WHEEL STEERING TO CRAB STEERING**

Press buttons 1 and 3 at the same time and turn the steering wheel clockwise or anticlockwise to align the front wheels.
The misalignment of the front wheels is signalled by the acoustic alarm, which will stop once the wheels are correctly aligned. The green led (A) will go out and the red led (C) will come on at the same time. During the alignment phase the symbol (↔ ↔) will appear on the display (17) positioned on the front dashboard and will go out as soon as the front wheels are aligned.
At this point the speedometer “Km/h or MP/h” will appear on the display (17).



☞ **IMPORTANT**

- **It is possible to switch over from two-wheel steering to crab steering only in 1st-2nd gear and with the machine at rest.**



9 - BACKHOE BOOM LOCK CONTROL SWITCH

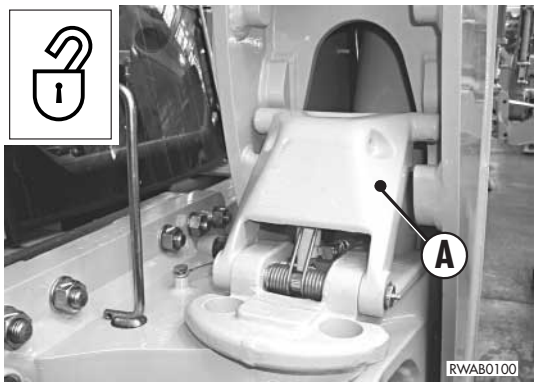
DANGER

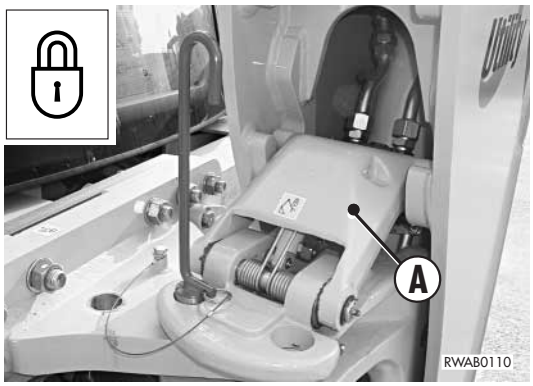
- **Always engage the boom safety lock when the backhoe is not used and when travelling on roads.**

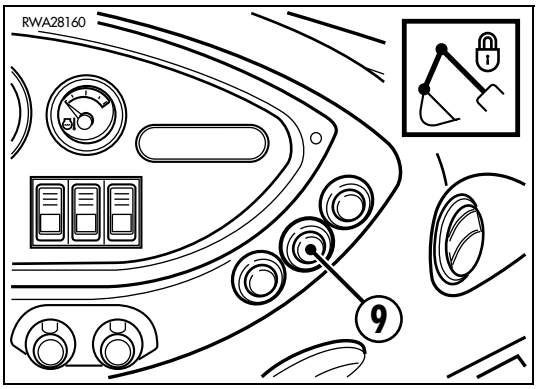
This is a two-position switch and is used to connect the boom to the safety lock (A).
In the rest position (led off) the backhoe is free and can move without any interference with the lock.
The switch is in this position even when the boom is connected to the safety lock.
To engage the safety lock, proceed as follows:
Select the uncoupling position by pressing the switch (9) (led on), fold the arm and the bucket, raise the boom completely and engage the lock by pressing the switch again (led off).
Before moving the machine, make sure that the lock is properly engaged in its seat.

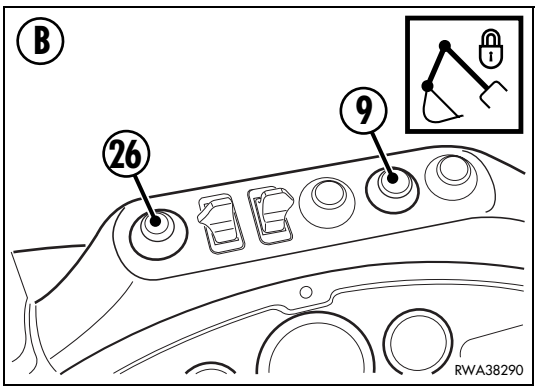
IMPORTANT

- **If the machine is equipped with backhoe servo controls, the switch (9) is positioned on the upper part of the side dashboard, as shown in Fig. B.**
  The switch (9) can be disabled by means of the switch (26).
  For further information, see "BACKHOE CONTROL LOCKING SWITCH pos.26".









19 - STEERING WHEEL ADJUSTMENT LOCKING LEVER

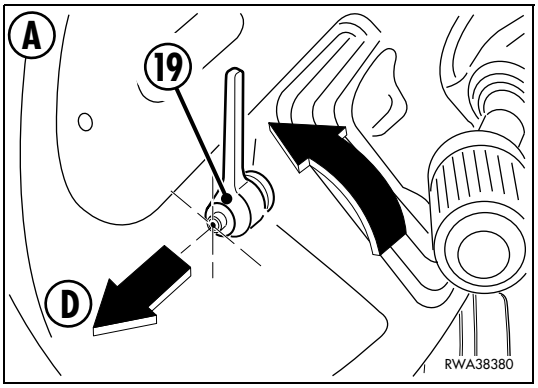
DANGER

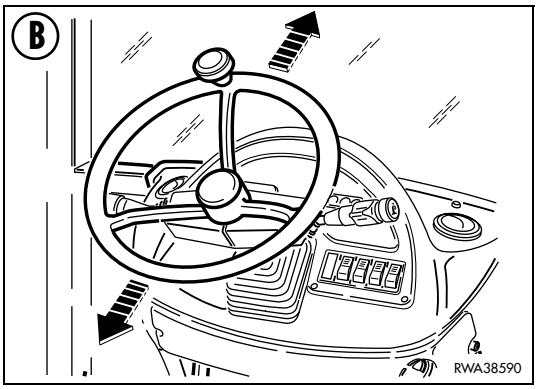
- **Adjust the steering wheel while seated in the driving position. The machine must be completely still and the engine must be off.**
- **Before using the machine, make sure that both the steering wheel and the adjusting lever are completely locked. Non-compliance with these instructions may lead to serious accidents.**

This lever is positioned on the left side of the steering wheel and allows the latter to be adjusted according to the physical characteristics of the operator.
It is possible to choose among different positions; for the adjustment, proceed as follows:

1 - After stopping the machine and the engine, turn the lever (19) anticlockwise to release the steering wheel (see Fig. A).

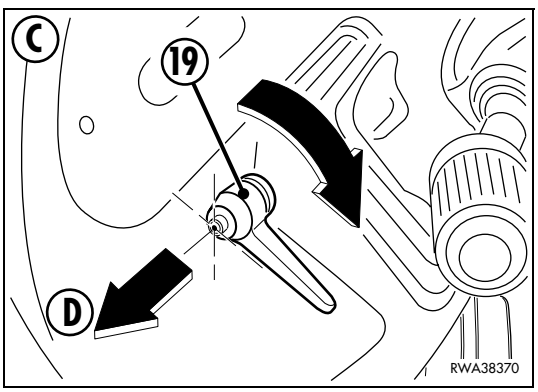
2 - Adjust the steering wheel by moving it forward and backward until finding the desired position (see Fig. B).
Turn the lever (19) clockwise to lock the steering wheel in the desired position (see Fig. C).





IMPORTANT

- **If the stroke of the lever (19) isn't sufficient to lock the steering wheel completely, pull the lever (19) as indicated by the arrow (D). At this point, shift the lever (19) to its original position by repeating the operation and turning it clockwise or anticlockwise.**

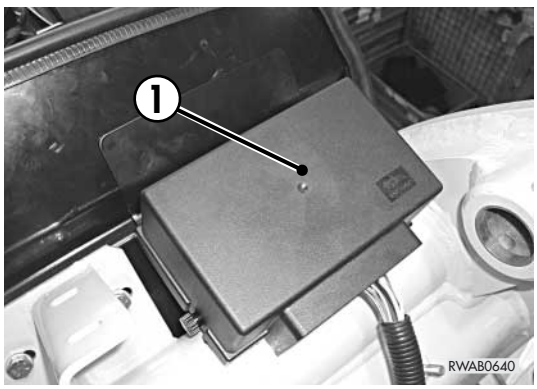


3.4.1.2 RELAYS

POSITION	DESCRIPTION
K2	Reversing gear acoustic alarm (if installed)
K3	Four-wheel drive relay
K4	Start enabling relay
K5	Low beam relay
K6	High beam relay
K8	Horn relay
K9	Blinking relay
K10	EGM power supply relay

3.4.2 ENGINE LINE FUSES AND RELAYS

The fuses and relays are grouped on a single base positioned inside the engine compartment and protected by a cover (1). This unit can be reached by opening the engine hood (see “3.5.1 ENGINE HOOD”).



3.5.6 SEAT

3.5.6.1 SEAT (STANDARD)

The seat is extremely comfortable, in fact it offers five adjustment options:

a - Longitudinal adjustment.

b - Back inclination adjustment.

c - Adjustment of the suspension, to dampen the inevitable vibrations and jumps as much as possible.

d - Seat cushion height and inclination adjustment.

e - Rotation for works with the backhoe.

The operator can choose the most comfortable driving position according to his physique and to the angular position of the steering wheel.

The longitudinal adjustment of the seat is obtained by operating the lever (1) and making the seat slide on the guides; once the desired position has been found, release the lever and carry out slight movements, in order to make sure that the lock pin is properly fitted in its seat.

The back adjustment is obtained by acting on the levers (2) while pushing with the back; the back will automatically adapt itself to the operator's body.

The adjustment of the suspension is carried out with the snap lever (3) and can be controlled by observing the position of the indicator (4). The operator must carry out this adjustment while seated; the right suspension degree is reached when the indicator is positioned in correspondence with the seat frame.

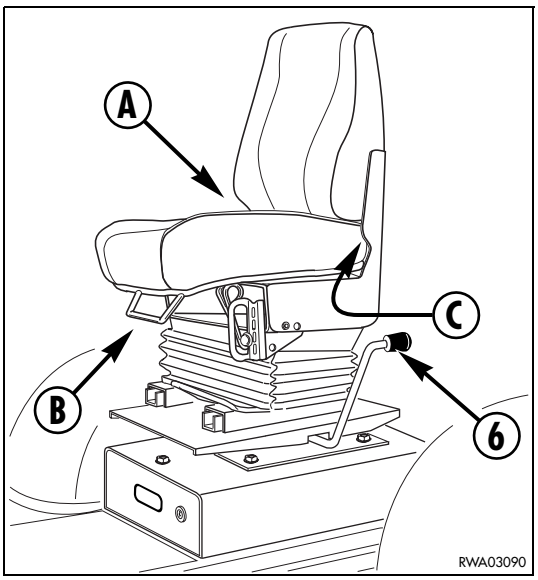
If the indicator protrudes from the frame, it is necessary to operate the lever (3) with the (+) mark on the grip towards the operator; if the indicator is positioned inward with respect to the frame, the lever (3) must be operated with the (-) mark on the grip towards the operator.

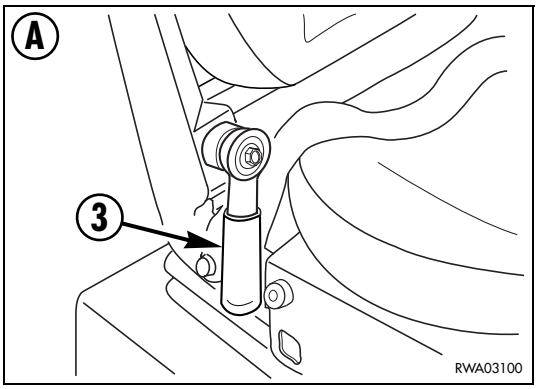
The seat cushion inclination and height can be adjusted by means of the lever (5); three height positions and five different inclination positions are available.

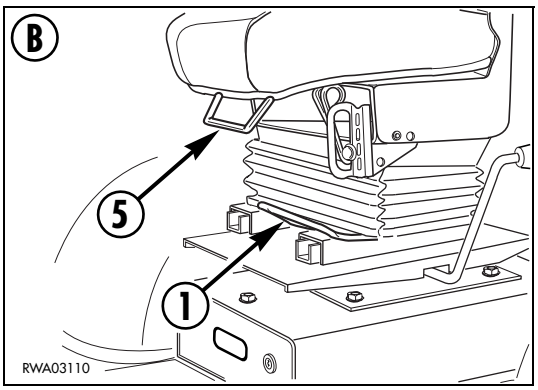
The rotation of the seat for works with the backhoe is obtained by operating the release lever (6); the locking is automatically carried out every 180°.

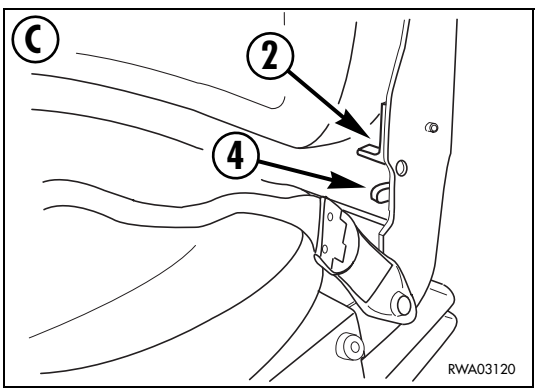
CAUTION

- **The seat is equipped with a safety system that sends out an acoustic alarm if the transmission control is operated while the seat isn't in the correct frontal position.**

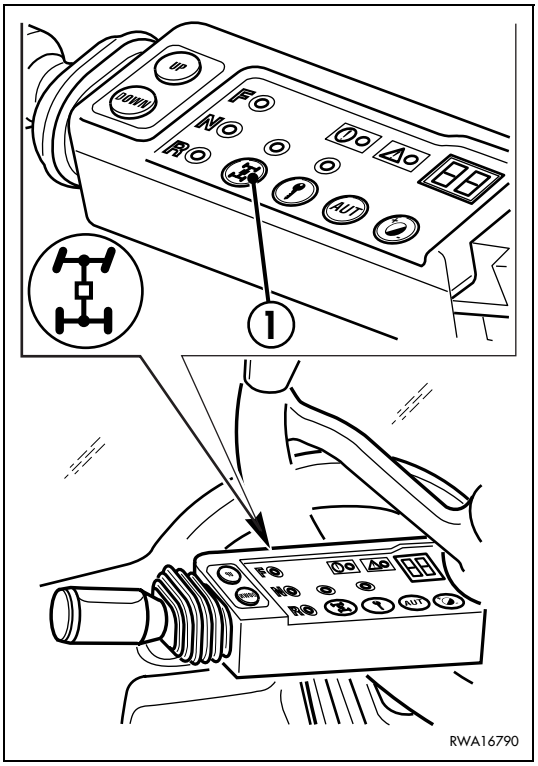








3.6.5.1 ENGAGING THE FOUR-WHEEL DRIVE



DANGER

- **The four-wheel drive must be engaged only with machine at rest or travelling at low speed.**
- **The four-wheel drive can be engaged only in 1st or 2nd gear; when the other gears are engaged, the four-wheel drive cannot be connected.**
- **When travelling on roads or removing the machine, disengage the four-wheel drive.**

The four-wheel drive is engaged and disengaged by means of the push button (1) on the gearshift control. It is normally used when the machine must move on muddy, icy, gravelly ground, on slopes and in any situation in which it is difficult to move the machine. The four-wheel drive must be used even when the machine is provided with the optional equipment to be employed as snowplough.

IMPORTANT

- **The four-wheel drive is engaged automatically when the machine brakes while in 3rd or 4th forward .**

3.11 PRECAUTIONS TO BE TAKEN IN THE WARM SEASON

1 - At the end of the cold season, change the lubricants, the coolant and the fuel.

☞ **IMPORTANT**

- **The coolant must be changed only if it is not permanent.**
  For the relevant specifications, see “4.3 FUEL, COOLANT AND LUBRICANTS”.

2 - Make sure that the cooling fan belt is in good conditions.

3 - Make sure that the fins of the radiator and of the heat exchanger are clean.

4 - Check the radiator cap gasket and spring; in case of doubt regarding tightness and setting, change the cap.

If the machine must be stored for a long period of inactivity, it is advisable to put it in a sheltered place and to take the following precautions, in order to keep all its components sound and efficient:

1 - Clean the machine thoroughly, repainting it where necessary in order to prevent oxidation.

2 - Drain and replace all the hydraulic circuit fluids and the lubricants (axles, reduction gears, converter and engine), keeping to the rules indicated in the section regarding maintenance.

3 - Change all the filtering elements (air cleaner, engine oil filter, hydrulic circuit filters, diesel oil filter).

4 - To avoid the deformation of the tyre sidewalls, insert supports under the axles, in such a way as to relieve the weight of the machine.

5 - Change the coolant (permanent coolant).

6 - Drain the normal fuel and fill the tank with at least 10 liters of special washing and protecting fuel.

7 - Let the engine run for about 10 minutes, in such a way as to eliminate the residual normal fuel from the filters, the injection pump and the entire fuel supply system. This operation avoids the locking of the injection pump and the injectors.
Stop the engine and refuel with normal diesel oil.

8 - Remove the battery, check the electrolyte level and make sure that the battery charge is sufficient. Store the battery in a room with suitable temperature and periodically recharge it.

9 - Grease the hydraulic cylinder rods and the equipment joints.

10 - Seal the end of the exhaust pipe and the fuel tank cap.

11 - Move the machine controls to the neutral position and engage the mechanical safety locks of the equipment controls.

12 - Hang a warning notice on the steering wheel to indicate the condition of the machine.

13 - Lock the cab doors, the fuel tank cap and the engine hood.

- Never mix oils of different brands.
  Do not top up with any oil different from the oil used in the machine. If necessary, drain all the oil and fill the tank with the oil of the new brand.

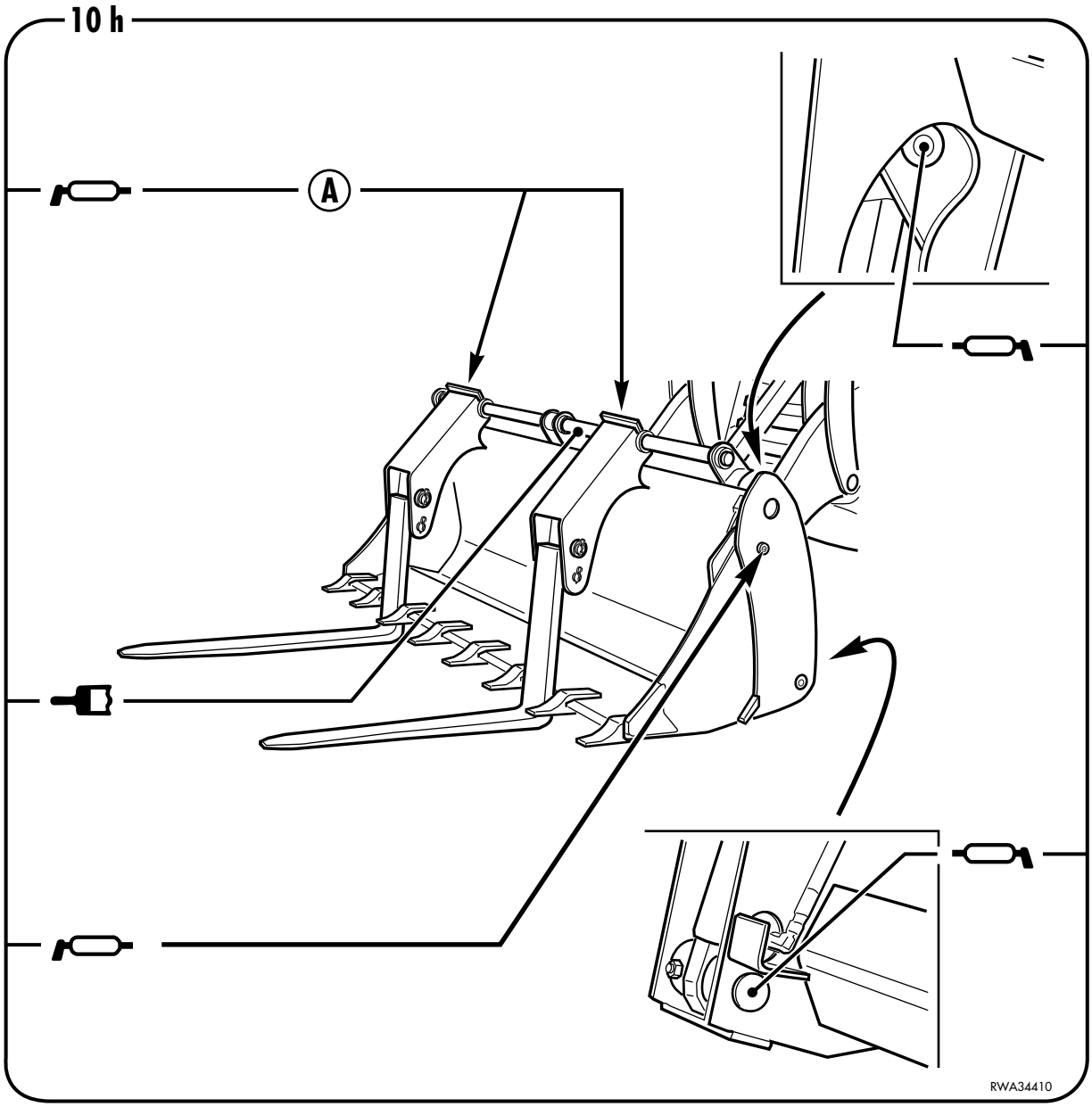
DANGER

- **Oils, filters, the coolant and the battery are considered special waste and must be collected and disposed of according to the regulations in force.**
- **The combustible material of some components may become extremely dangerous if it burns. For this reason, avoid any contact of burnt material with your skin or eyes and do not inhale the fumes.**

4.5.2 LUBRICATION DIAGRAM
(4in1 bucket and pallet forks)

☞ **IMPORTANT**

- **For the other greasing points, see “4.5.1 LUBRICATION DIAGRAM”.**
- **The points indicated are symmetrical and must be lubricated every 10 hours.**
- **The fork sliding bars and the safety pins must be lubricated with grease only to protect them from oxidation.**
- **The fork joints (A) must be lubricated only if the forks are used.**



Grease **Grease**

4.7.4 MAINTENANCE EVERY 10 HOURS OF OPERATION

N.	PART	OPERATION	PAGE
a	Joints	Lubricate	216

4.7.5 MAINTENANCE AFTER THE FIRST 50 HOURS OF OPERATION (Only for machines in which the synthetic biodegradable oil type HEES is used)

(Carry out these operations together with those to be performed every 50 HOURS, see “4.7.6 MAINTENANCE EVERY 50 HOURS OF OPERATION”).

N.	PART	OPERATION	PAGE
a	Hydraulic oil drain filter (Only for machines with synthetic biodegradable oil)	Change	230

4.7.6 MAINTENANCE EVERY 50 HOURS OF OPERATION

N.	PART	OPERATION	PAGE
a	Radiator	Check level	218
b	Braking system	Check oil level	218
c	Propeller shafts	Lubricate (6 points)	219
d	Front axle joints and central coupling and rear axle joints	Lubricate (9 points)	220
e	Front and rear wheels	Check tyre pressure	220
f	Electrical system	Check	221

4.7.7 MAINTENANCE AFTER THE FIRST 250 HOURS OF OPERATION

(Operations to be carried out together with those prescribed at point “4.7.8 MAINTENANCE EVERY 250 HOURS OF OPERATION”)

N.	PART	OPERATION	PAGE
a	Front axle	Change oil	238
b	Rear axle	Change oil	239
c	Hydraulic transmission	Change oil	240
d	Hydraulic transmission filter	Change	241
e	Engine valves	Check clearance	241
f	Hydraulic oil drain filter	Change	230

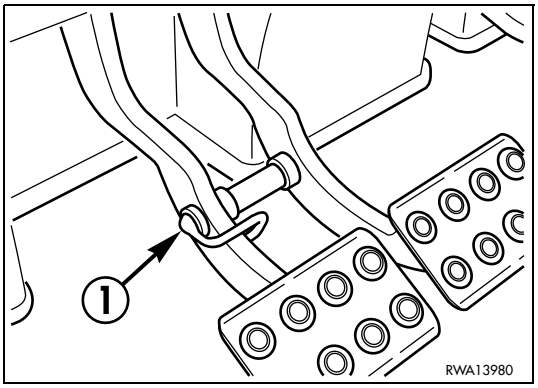
4.7.1.j CHECKING AND ADJUSTING THE BRAKE PEDAL STROKE

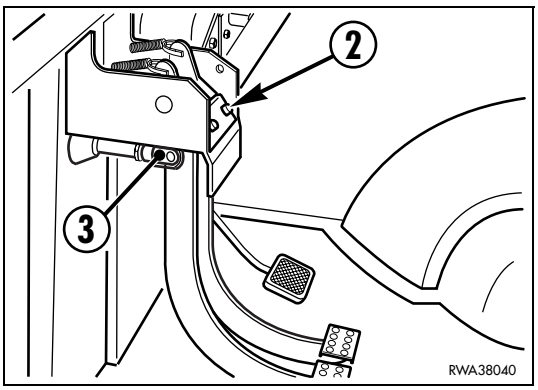
This check must be carried out when operating on the braking unit in order to eliminate any trouble.
To check and adjust the brake pedal stroke, proceed as follows:

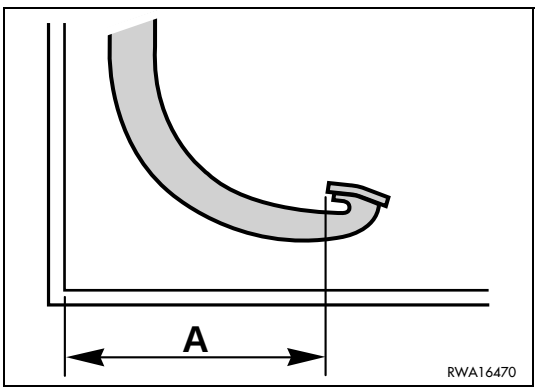
1 - Insert the connection pin (1) in order to couple the pedals.

2 - By acting on the end-of-stroke rubber pads (2), position the pedals in correspondence with measure “A” - 313 mm; lock the pads in this position. (Use a 13 mm spanner).

3 - Lower the pedals to the measure “A”-303 mm and adjust the brake pump rods (3) until they touch the pumping pistons; lock them in this position.
(Use a 22 mm spanner).

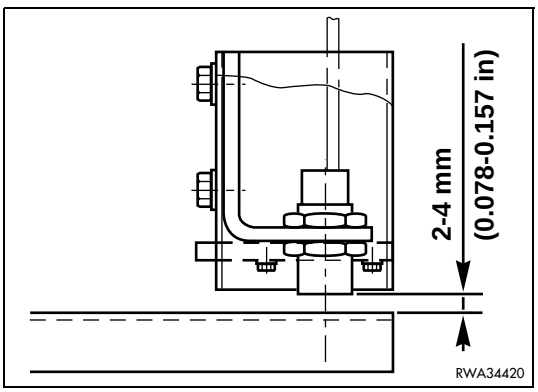






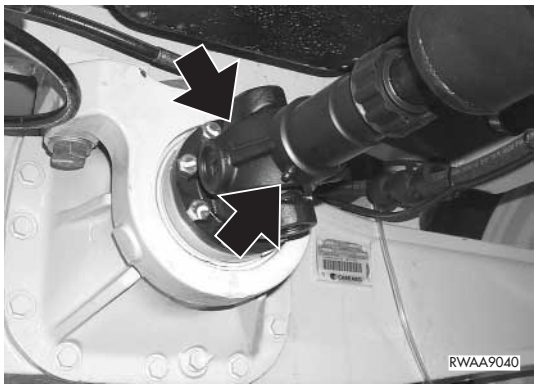
4.7.1.k ADJUSTING THE AUTOMATIC RETURN-TO-DIG DEVICE OF THE FRONT BUCKET (if installed)

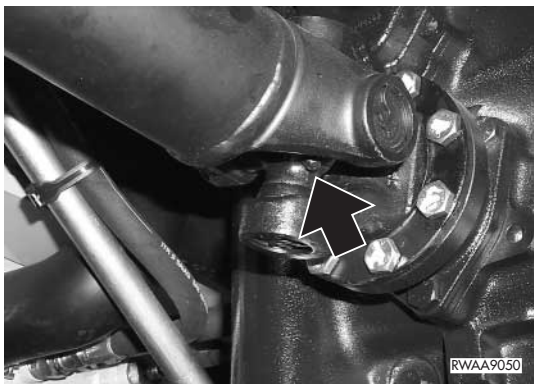
The device for the automatic return of the front bucket to the digging position automatically brings the front bucket to the loading position when it is lowered to the ground. The sensor is positioned on the right dumping cylinder and determines the horizontal position of the bucket with respect to the ground after the bucket dumping control has reached the end of stroke and the electromagnet of the distributor rod has been operated (see “3.3.5 pos. 5 LOADER CONTROL LEVER”).
The sensor must be positioned at a distance of 2-4 mm (0.078-0.157 inches) from the sliding rod.

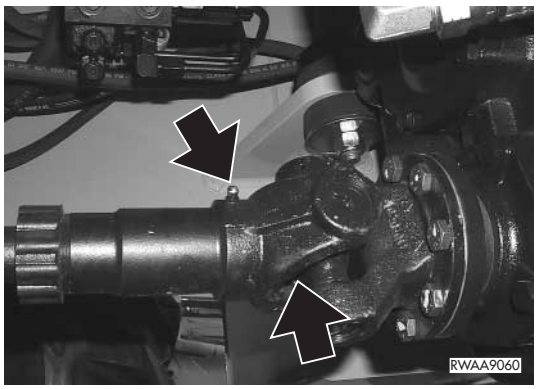


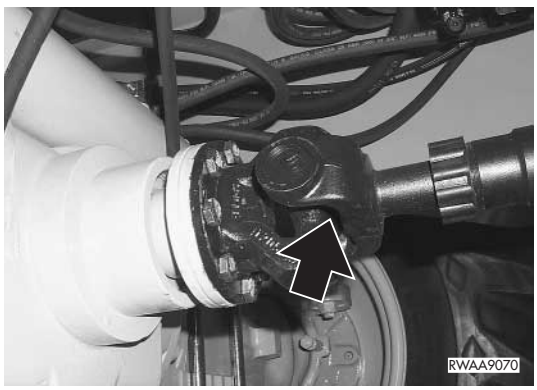
4.7.6.c LUBRICATING THE PROPELLER SHAFTS

The lubrication must be carried out after carefully cleaning the grease nipples, by applying the greasing pump supplied together with the machine and using the prescribed grease.
(See “4.3 FUEL, COOLANT AND LUBRICANTS”).
Once the lubrication has been carried out, make sure that all the points have been lubricated and remove the contaminated grease that may have spread out of the joints.









4.7.10 MAINTENANCE EVERY 500 HOURS OF OPERATION

Carry out these operations together with those to be performed every 50 HOURS and every 250 HOURS.

4.7.10.a CHANGING THE ENGINE OIL

DANGER

- **Change the oil with the machine parked on level ground and raised loader arm with engaged safety lock.**
- **Soon after the machine has been stopped the engine oil is very hot and may cause burns; let the engine cool down until it reaches a temperature of 40÷45°C before draining the oil.**
- **The oil that may be spilled during the change makes the ground slippery, therefore, use anti-slip shoes and immediately remove any trace of oil from the floor.**
- **Oils, filters, the coolant and the battery are considered special waste and must be collected and disposed of according to the anti-pollution regulations in force.**

IMPORTANT

- **The engine oil must be changed when the relevant alarm signal comes on on the electronic display positioned on the front dashboard. After performing this maintenance operation, set the partial service hours to zero. For further details, see "3.3.1 FRONT INSTRUMENTS" pos. 17.**

When changing the engine oil, change also the filter (see "4.7.10.b CHANGING THE ENGINE OIL FILTER").
Proceed as follows:

1 - Open the engine hood (see "3.5.1 ENGINE HOOD").

2 - Remove the drain plug (1) of the oil pan, gathering the used oil that flows out into a container with suitable capacity. (Use a 19 mm spanner).
While the oil flows out, remove the filling cap (2), so that the oil can flow freely.

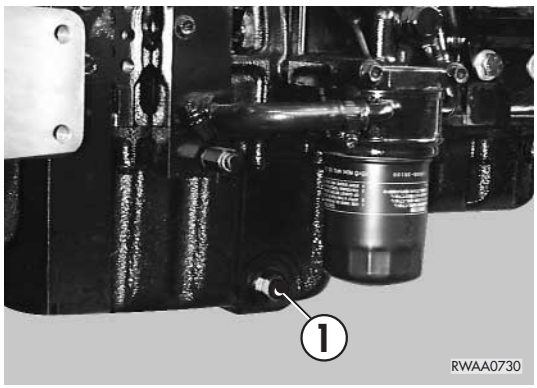
3 - Change the filter (see "4.7.10.b CHANGING THE ENGINE OIL FILTER").

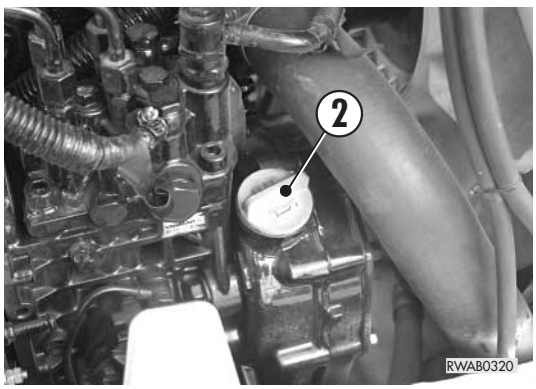
4 - Tighten the plug (1) onto the pan and pour the prescribed quantity of new oil, using the dipstick (3) to make sure that the oil reaches the MAX. level.

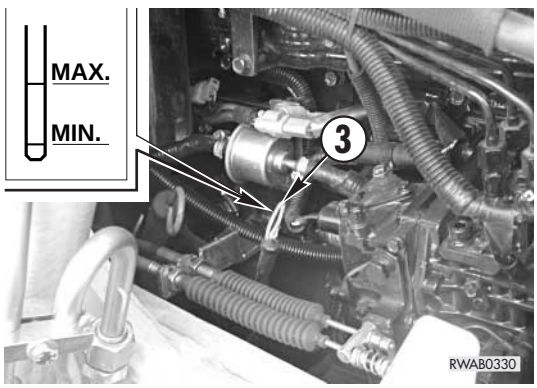
5 - Put back the filling cap (2), start the engine, let it run for 5 minutes and then stop it.
Check the level again and top up if necessary.

6 - Close the engine hood.

Use oil suitable for the ambient temperature.
(See "4.3 FUEL, COOLANT AND LUBRICANTS").







4.7.11.b CHANGING THE REAR AXLE OIL

DANGER

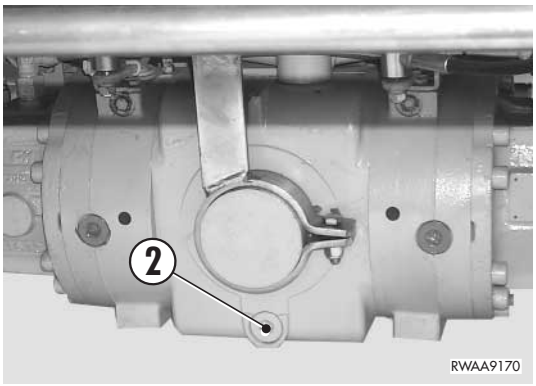
- **Oils, filters, the coolant and the battery are considered special waste and must be collected and disposed of according to the anti-pollution regulations in force.**

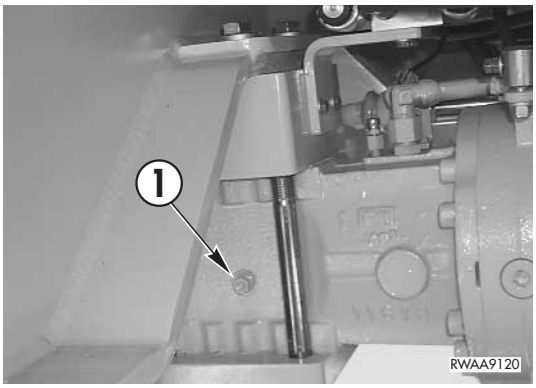
This operation must be carried out with the machine positioned on level ground and at operating temperature, so that the oil becomes fluid and can be easily drained, which facilitates the elimination of any suspended solid particles.

DIFFERENTIAL

1 - Remove the drain plug (2) and let the used oil flow out completely, gathering it into a container with suitable capacity. While the oil flows out, remove the plug (1).
Use a 1/2” square spanner and a 17 mm hexagon spanner.

2 - Once the oil has been drained, put back the plug (2) and pour oil of the prescribed type through the hole (1), until reaching the level corresponding to the lower edge of the hole itself.





IMPORTANT

- **With this operation both axle shafts are filled with oil; before checking the level definitively and putting back the plug, wait a few minutes, in order to permit the uniform distribution of the oil.**

3 - Put back the plug (1).

FINAL REDUCTION GEARS

1 - Move the machine until the drain plug (3) is in low position on the vertical axis.

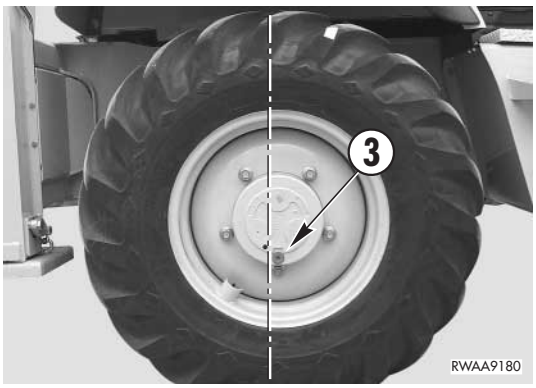
2 - Remove the plug (3) and let the used oil flow out, gathering it into a container with suitable capacity.
Use a 1/2” square spanner.

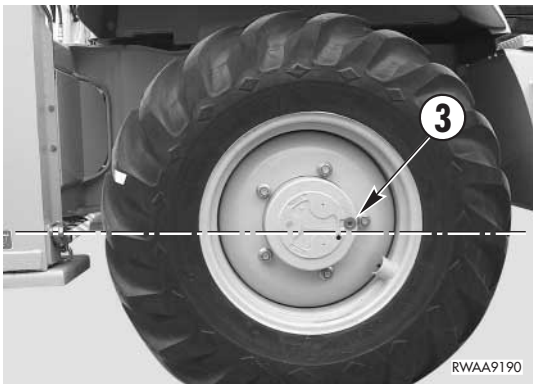
3 - Once the oil has been drained, move the machine until the hole (3) that serves also as level hole is positioned on the horizontal axis.

4 - Pour oil of the prescribed type until reaching the lower edge of the hole itself.

5 - Put back the plug (3).

Carry out some forward and backward movements, stop the machine and check the levels again.
Always use oil of the prescribed type. (See “4.3 FUEL, COOLANT AND LUBRICANTS”).





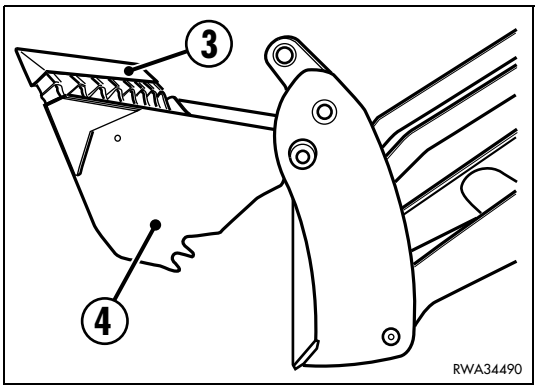
TECHNICAL SPECIFICATIONS

6.3 4in1 BUCKET

(For the characteristics, see “6.1 AUTHORIZED OPTIONAL EQUIPMENT”).

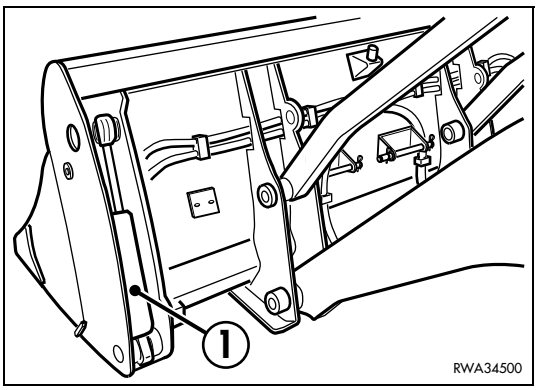
6.3.1 DESCRIPTION AND CONTROLS

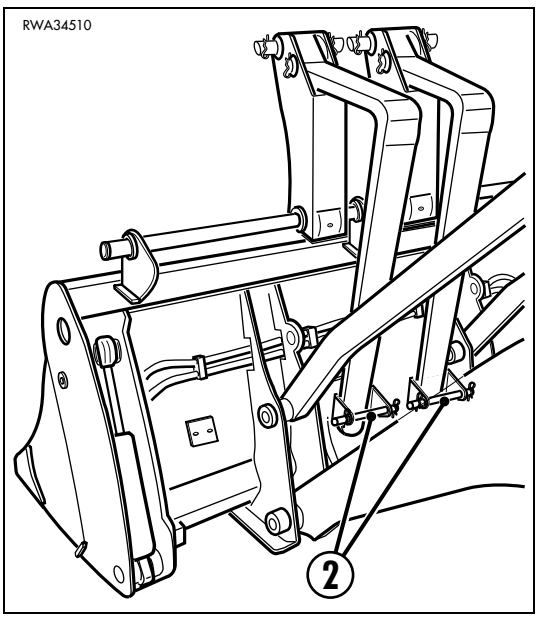
The 4in1 bucket can be used for several applications and eliminates the need to use specific equipment.
Compared to the standard bucket, it comprises a mobile jaw (4) that can be opened to unload the material with no need to swing the bucket itself. The opening is obtained by means of two hydraulic cylinders (1) controlled by an additional distributor.
The distributor control for the opening and closing of the bucket is operated by two push buttons (5) and (6) positioned on the loader control lever (7) that also maintains all the normal functions (see “3.3.5 pos. 5 FRONT LOADER CONTROL LEVER”).

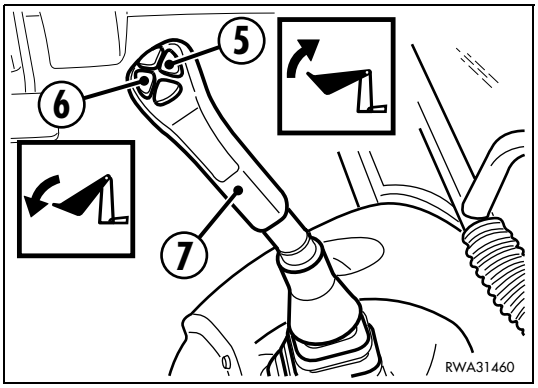


6.3.2 SAFETY DEVICES

The 4in1 bucket is provided with teeth protection casing (3).
If the bucket is equipped with pallet forks, the safety pins (2) keep the forks locked in overturned position in case of transfers or circulation on roads.
(See “6.4 PALLET FORKS”).
For the other safety locks, see “3.1.1 LOADER LOCKS”.







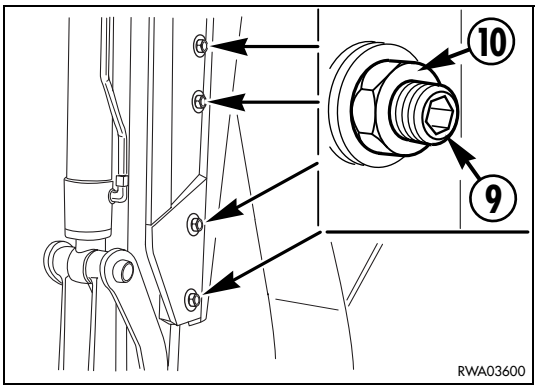
CAUTION

- **If the adjusting dowels (9) protrude to the same extent on the two sides, the operation described at point 6 can be carried out either on the right or left side.**

6 - Loosen the four lock nuts (10) and tighten the adjusting dowels (9) thoroughly, until taking up the slack completely. (Use a 27 mm spanner and a 8 mm hexagon spanner).

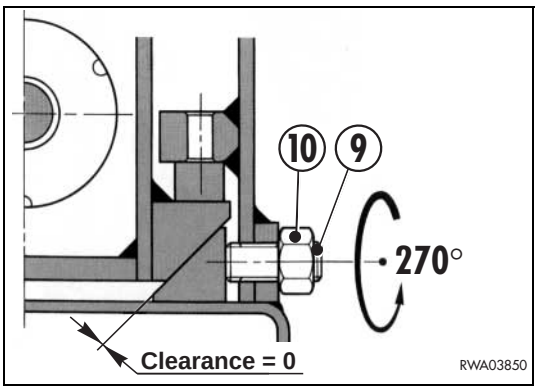
7 - Starting from the central positions, loosen the adjusting dowels (9) by 270° (3/4 turn) and lock them with the lock nuts (10).

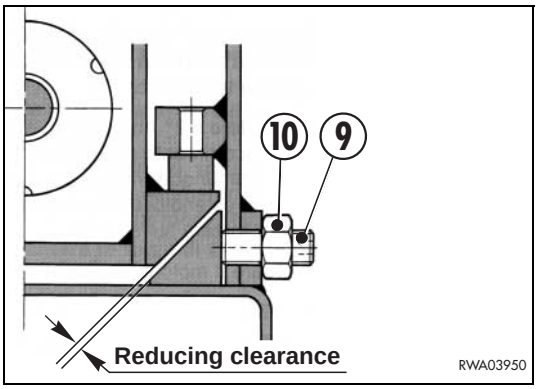
8 - Start the machine, extend and retract the telescopic arm more than once to make sure that it slides correctly.

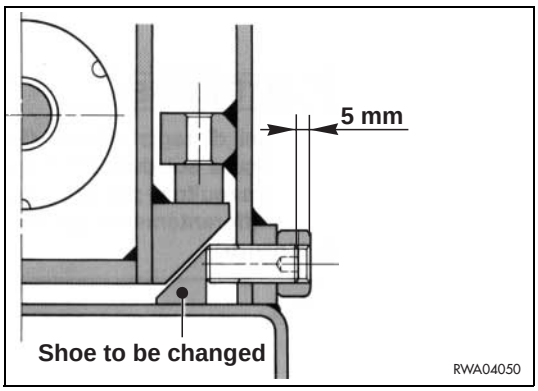


CAUTION

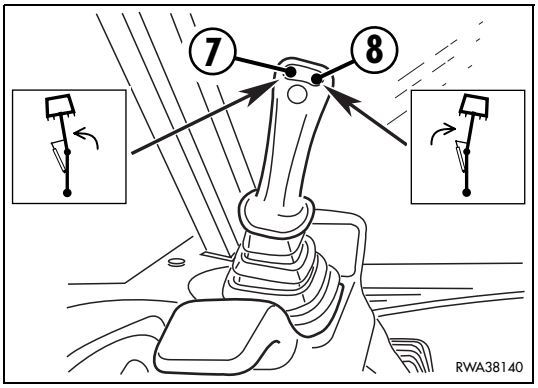
- **The wear limit allowed for the shoes is represented by the minimum engagement of the adjusting dowels (9) in the lock nuts; the shoes must be replaced when the heads of the dowels (9) are 5 mm back with respect to the lock nuts (10).**
- **Do not take up the slack completely, to prevent the guides from seizing.**







6.7.1.2 VERSION WITH SERVO CONTROLS (if installed)



If the machine is equipped with backhoe servo controls, the movement of the equipment with offset device is obtained by means of the push buttons (7) and (8) positioned on the left joystick lever.
The movements of the main equipment remain unchanged, see “3.3.5.2 MACHINE CONTROLS (Version with servo controls)” pos. 15 and 16.
The movements of the arm are controlled as follows:

1 - when the push button (7) is pressed, the arm swings to the left and when the button is released the arm stops;

2 - when the push button (8) is pressed, the arm swings to the right and when the button is released the arm stops.

☞ **IMPORTANT**

- **All the movements of the boom, the arm and the equipment are inhibited when the control safety device is locked, see “3.3.5.2 MACHINE CONTROLS (Version with servo controls)” pos. 26.**

6.7.2 MAINTENANCE

The offset device does not require any special maintenance operation, except greasing (see “4.5.5 LUBRICATION DIAGRAM”).