ARES 546 • 556 • 566
ARES 616 • 656 • 696

Use and Maintenance

Thank you for choosing a CLAAS tractor.

In this guide you will find the instructions for use and maintenance that you must know to get the best service from your tractor.

This document is not to be considered as contractual. CLAAS, anxious to continue the technical development of their products, in particular reserve the right to change, without notice and at any time, the details contained in this manual.

If you are still unsure about any points, the technicians of the CLAAS network will be pleased to give you any additional information you may require.

The description of the different models contained in this manual was established from technical characteristics known at the time of writing the document. The manual contains all existing equipment (standard or optional) for these models, and their presence in the tractor depends on the version and options chosen and on the country of sale.

Important: See chapter "M".
Servicing operations during the guarantee period are mandatory; failure to carry then out will nullify the contractual guarantee.

Failure to observe the instructions for use and maintenance as described in this manual definitively excludes any possibility of recourse to the CLAAS guarantee system.

For your safety

Before using the tractor for the first time, read the user's manual and observe the general safety instructions!

WARNING TRIANGLE

In this user's manual, this sign indicates all the paragraphs concerning safety aspects. Pass on these safety instructions to all other users.

The instruction and warning plates affixed to the tractor give important information about possible risks of use. Respect for these instructions is a guarantee of your safety!

Appropriate use

This tractor has been designed to be used exclusively for normal agricultural work (appropriate use).

Any use other than that defined above will be considered as inappropriate and will release the manufacturer from any liability in the event of damage or injury; the user alone will bear the risks resulting from such misuse.

Appropriate use also supposes the observance of the operating, maintenance and repair regulations laid down by the manufacturer.

The tractor must be used, maintained and repaired only by persons with a thorough knowledge of the vehicle and aware of the possible risks.

Specific accident prevention instructions must be observed as well as general rules concerning technical safety, health and safety regulations and the highway code.

The manufacturer declines all responsibility for any damage resulting from any modification made to the tractor without their approval.

Model	Type
ARES 546	5312
ARES 556	5322
ARES 566	5332
ARES 616	8212
ARES 656	8232
ARES 696	8242

CHAPTER SYMBOLS

REF	CHAPTERS	SYMBOLS
A	IDENTIFICATION - APPROVAL	
	SAFETY	
B	CAB	
C	ELECTRICAL SYSTEM	
D	ENGINE	
E	TRANSMISSION	
F	FRONT AXLE	
G	HYDRAULICS - LINKAGE AND REAR HITCH	
H	FRONT POWER TAKE-OFF - FRONT LIFT AND FRONT TOW LINKAGE	
I	ON BOARD COMPUTER	
J	WHEELS AND TYRES	
K	DIMENSIONS, WEIGHTS, CAPACITIES AND BALLAST	
L	MAINTENANCE	
M	OPERATIONS THAT ARE MANDATORY UNDER THE GUARANTEE	

Notes

CONTENTS

F - FRONT AXLE

G - HYDRAULICS - LINKAGE AND REAR HITCH

H - FRONT POWER TAKEOFF, LINKAGE AND FRONT COUPLING

I - ON BOARD COMPUTER

J - WHEELS AND TYRES

K - DIMENSIONS, WEIGHTS, CAPACITIES AND BALLAST

L - MAINTENANCE

M - OPERATIONS THAT ARE MANDATORY UNDER THE GUARANTEE

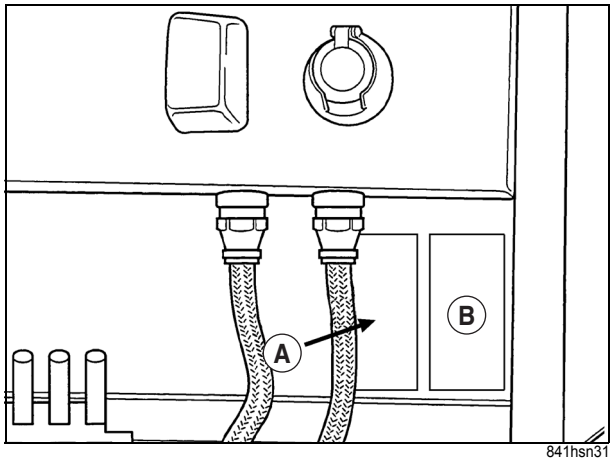
A - IDENTIFICATION - CERTIFICATION - SAFETY

IDENTIFICATION

In any correspondence, always state:

The tractor model, type and serial number (plate A). The serial number is also stamped on the right side of the front chassis.

Type :
Serial No:
Model:



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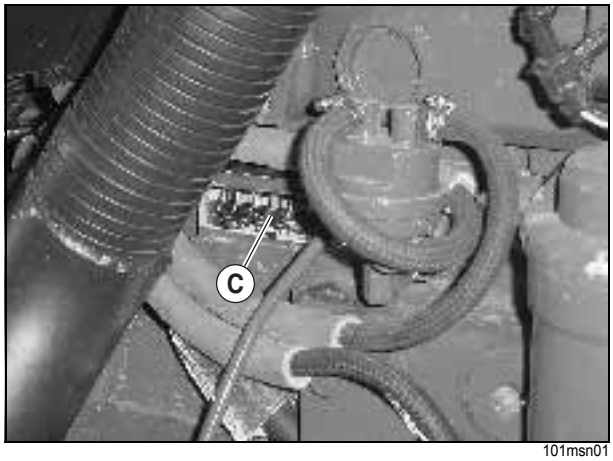
Structure homologation (plate B). The serial number is stamped between the trailer hook and the cable passage.

Engine type and serial number (plate C):

Type :
Serial No:



101msn01

CERTIFICATION

- Certification of ARES tractors range 500-600 according to European directives 74/150/CEE (amended 2001/3/CE).
- Certification of ARES structures range 500-600 according to European directives 79/622/CEE (amended 1999/40/CE).
- Certification N° of tractors ARES 546, 556, 566: e2*2001/3*0021.
- Certification N° of tractors ARES 616, 656, 696: e2*2001/3*0022.
- Certification N° of safety structures of ARES tractors range 500-600:
  - 546RX, 556RX, 566RX N° e2 S 073 ;
  - 546RZ, 556RZ, 566RZ N° e2 S 075 ;
  - 616RX N° e2 S 074 ;
  - 616RZ, 656RZ, 696RZ N° e2 S 077.

CERTIFICATE OF COMPLIANCE

ARES tractors comply with European regulation 75/322/ CEE (amended 2001/3/CE) relative to electro-magnetic compatibility.

SAFETY

FOREWORD

CLAAS Tractors are designed and built to give you optimum service over many years. They are designed to provide the most comfortable and safe working conditions.

However, accidents can easily happen in agricultural work. It is important to know the dangers and how to avoid them.

We respectively draw your attention to certain aspects that merit constant attention (non exhaustive list).

PRECAUTIONS BEFORE STARTING

Caution is the best guarantee against any risk of accident.

The driver must be fully familiar with the tractor and must understand all the controls, their position and their purpose. This manual must be read carefully.

If the tractor is used by anybody other than the owner, he must be given all explanations required to allow him to work safely.

The driving position must be clean (instrument panel, steering wheel, floor and pedals).

Footsteps must be clean (no mud) to avoid slipping when climbing or descending.

Use the steps and handles provided when getting into or out of the tractor.

Before starting the engine, make sure that all controls are in the neutral position, particularly the power take-off lever.

Only run the engine in well ventilated areas.

Make sure there is nobody nearby before starting the tractor.

Fully release the handbrake before starting.

Do not start work if the tractor is not working properly.

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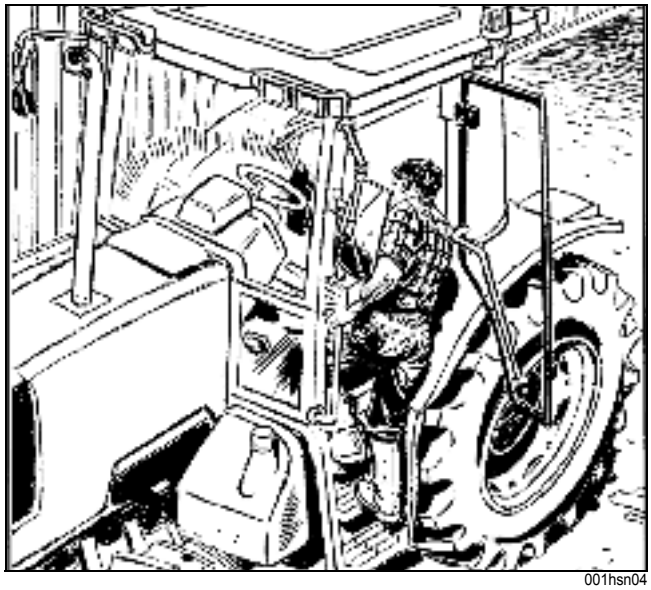

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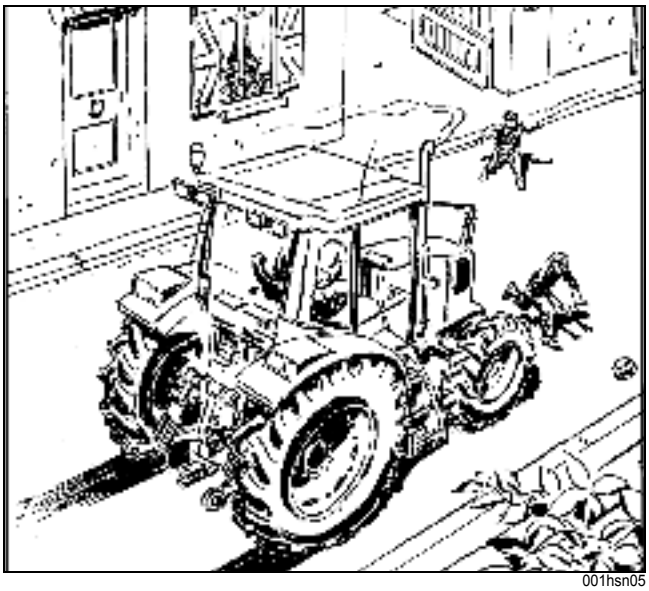
CONDITION OF THE TRACTOR

Maintaining the tractor in the best possible condition, by carrying out all routine maintenance (oil changes, level checks, overhauls, adjustments and thorough cleaning) will allow it to be used in the safest and most profitable way.

Check the following items first:

- ***High temperature components:*** Check that airborne particles such as straw, grass, wood chips etc., do not accumulate in high temperature areas. Clear debris from around the engine and the exhaust system. For tools attached to the front or the side of the tractor, inspect and clean the areas around the attachments for the various supports.
- ***Brakes:*** Check that the brakes work properly. Check the operation of the hand brake and foot brake.
- ***Steering:*** Check the operation of the hydrostatic steering.
- ***Transmission:*** Check the transmission fluid level (especially if external services are used).
- ***Hydraulic system:*** Check the condition of the system (unions, pipes, hoses), particularly the hoses to the steering actuators.
- ***Electrical system:*** Check the condition of the electrical system (batteries, wiring, headlights, indicator lights, hazard lights, rotating beacons, windscreen wipers, etc.).
- ***Lighting - indicators:*** All lighting and indicating equipment must not only be in working order, but must be fully visible; clean them. Carry a spare set of bulbs. Replace any defective element.

Only fit genuine CLAAS parts. The CLAAS network is at your disposal for any parts or products required to keep your tractor in perfect working order.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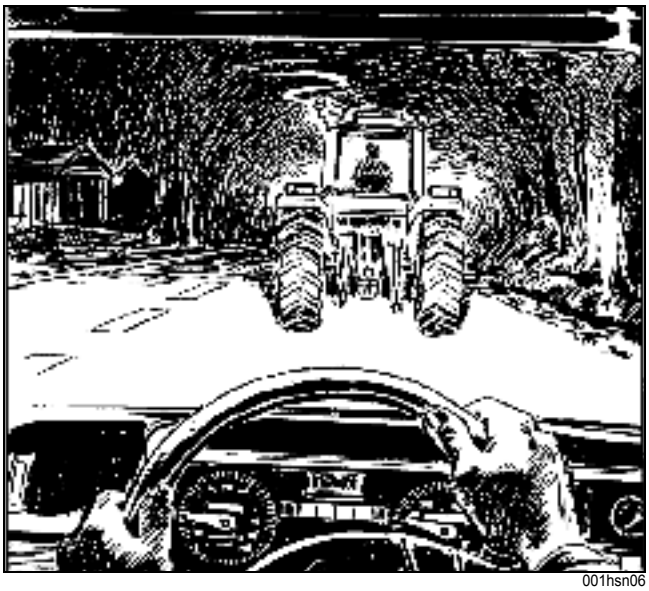
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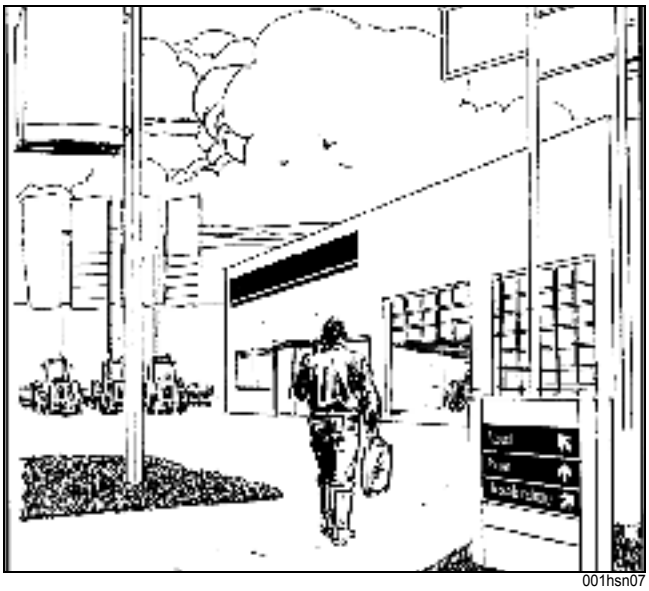

001hsn07

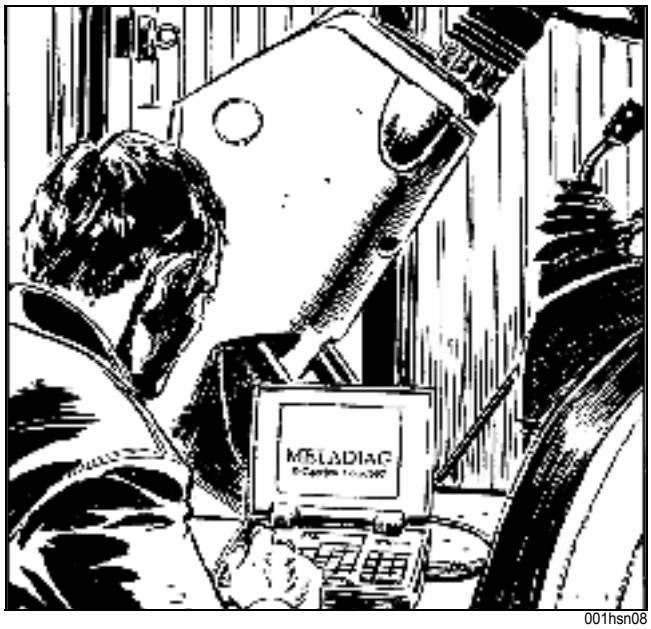
ADJUSTMENT OR MAINTENANCE - REPAIRS

Only carry out operations well within your capabilities. A number of simple adjustments are described in the manual (clutch and brake free travel, etc.). Never attempt to work on your tractor unless you have perfectly understood the procedure and have all the basic equipment required.

Special equipment is required to remove or install major components (the cab, engine, transmission, front axle); this equipment represents the only guarantee of safe working conditions and successful repair.

The cab must be removed only with CLAAS approved equipment.

The CLAAS network is at your disposal for all this work. It has the approved special tooling, the skills required and genuine CLAAS parts. If you have any doubts at all, call in your CLAAS agent.



001hsn08

AXLE STANDS

If the tractor is to be placed on axle stands, always work on a flat, horizontal, hard surface.

Check the axle stands are suitable for the load. For this operation, check the tractor's front and rear weights in chapter K.

4-wheel drive tractor:

If the rear axle is on stands, do not start the engine:

Risk of the tractor moving if the brakes are activated (foot brake or hand brake).

If the engine has to be started, the front axle must also be supported on axle stands.

001hsn09

HYDRAULIC SYSTEMS

Transmission oil: Transmision oil is used as hydraulic fluid for the linkage and external services.

Oil escaping from a pipe under pressure can have sufficient force to penetrate the skin.
Should an injury be caused by oil under pressure, see a doctor immediately. Serious infection can occur if the wound is not treated immediately.
Consequently, always use a piece of wood or cardboard to find a leak on a pipe under pressure: never use your hand!

As a general rule: Make sure the unions are tight and the pipes in good condition before putting the system under pressure.

Never loosen a union when the circuit is under pressure.

For any repairs to the hydraulic system, stop the engine and lower the implement to the ground.

Maintenance - greasing: Always stop the engine.

ELECTRICAL SYSTEM

Knowledge and skill are required to work on the electrical system. If the need arises (installation of miscellaneous accessories, radio etc.) contact your approved CLAAS repair agent.

Moreover:

- Always disconnect the battery negative terminal before working on the electrical system.
- Never weld on the tractor or on a towed implement.
- Never "patch-up" electric circuits.
- ***Never replace a blown fuse with a larger calibre fuse; you could cause a fire***.
- ***Never carry out work on components such as the alternator or the fan motor when the engine is running***.
- ***If you have to carry the battery, ensure that the acid does not contact the skin; protect your eyes from splashing***.

FUEL

RE-FUELLING

Before filling the tank, always carefully clean around the fuel cap to remove any pieces of straw, twigs, etc. which could help start and then propagate a fire.

Moreover:

- ***Never fill the tanks when the engine is running or near a naked flame***.
- ***Do not smoke when filling with fuel***.

COOLANT

Do not work on the cooling system when the engine is hot (risk of burns).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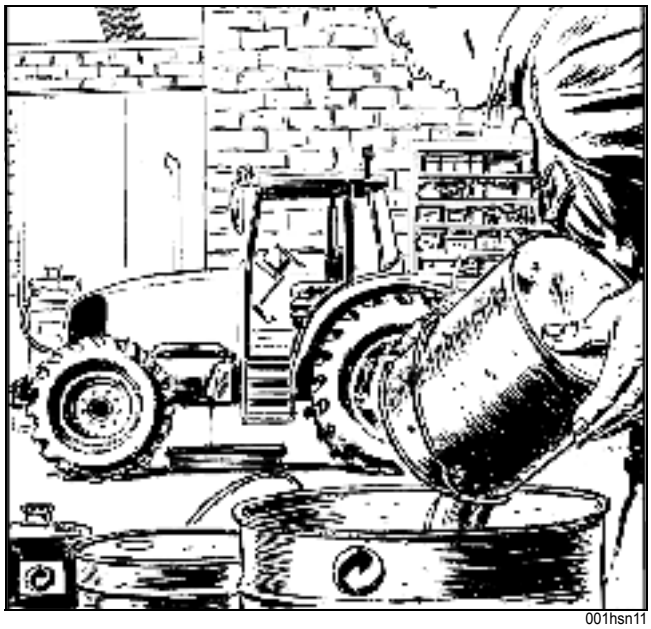

001hsn11

ROAD USE - USE FOR TRANSPORT

Always comply with THE LEGISLATION on the use of agricultural tractors on the road.

If in doubt, consult the police or insurance companies.

Whenever possible, avoid using busy roads.

When transporting equipment on a public road, use the warning device required by the highway code.

All indicators must be clean and in working order.

The working lights must not be lit.

Brake pedals must be coupled together.

Do not use the differential lock on the road or in bends.

If carrying an additional passenger, the tractor must be fited with a passenger seat.

Do not carry passengers except on the seat provided for the purpose.

Reduce speed on rough roads or tracks.

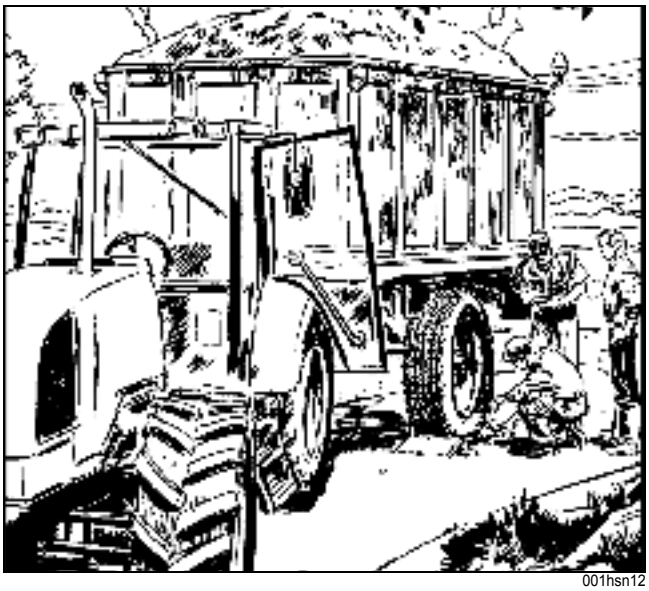
Towing: If the trailer has an independent brake system, connect the brake pipe to the brake valve coupling and not to the auxiliary spool valve.

If it is necessary to stop on the road in a position that causes a traffic hazard (insufficient visibility), it is mandatory to switch the hazard warning lights on.

When transporting mounted equipment, set the linkage to the raised position. If the tool has transport wheels, use them.

Slow down before changing direction.

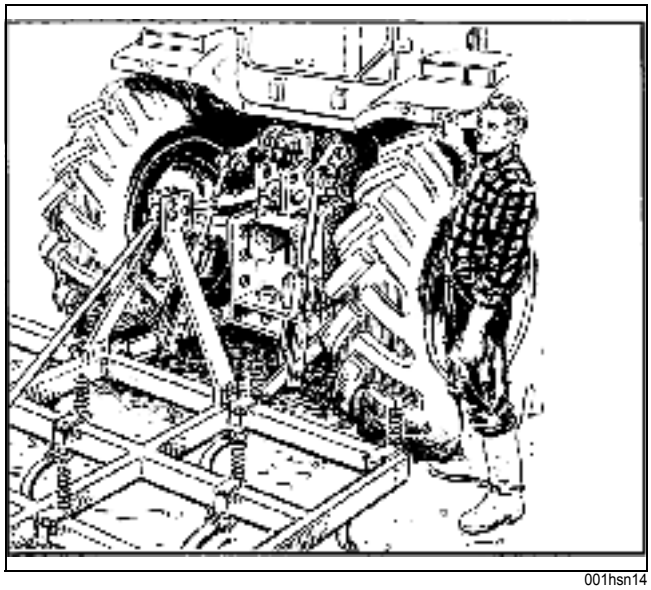
When travelling downhill, always remain in gear: never declutch. The gear selected should be the same as would be used to climb an equivalent gradient.



001hsn12

001hsn13

OPERATION



001hsn14

GENERAL RULE

As a general rule, always use equipment in good condition, suitable for the size of the tractor and the type of work.

WHEEL TRACK

Always use the maximum track compatible with the work in hand, to reduce the risks of overturning.

ATTACHING IMPLEMENTS

To hitch or unhitch an implement, place the gear lever in neutral and apply the hand brake. Use a low gear for all tractor manoeuvres.

Sufficient front-end ballast must be used if the implement is heavy, to prevent the tractor rearing-up.

Drawbar: This is not intended as a trailer towing hitch and is not designed to carry vertical loads.

Use the safety equipment provided to hitch implements (towing jaw, towing stub, retaining pins, etc.).

During hitching operations or when using the external linkage control, the operator must remain outside the hitch frame.

The pin situated on the front must only be used to tow the tractor using a bar on firm ground. In no circumstances must it be used to pull an implement or a tractor stuck in mud..

DRIVING

Do not enter or leave the tractor when it is in motion.

Avoid risk of overturning:

Do not turn sharply when working on slopes. Maximum slope allowed while working: See chapter K.

During a break in work, even if only brief, stop the engine and apply the handbrake. If the ground slopes, engage a gear. Lower the implement to the ground.

STATIONARY WORK

If the tractor has to work in a fixed position (use of static implements), chock the tractor wheels, apply the hand brake and keep a constant watch on it.

USE OF TOOLS DRIVEN BY THE PTO

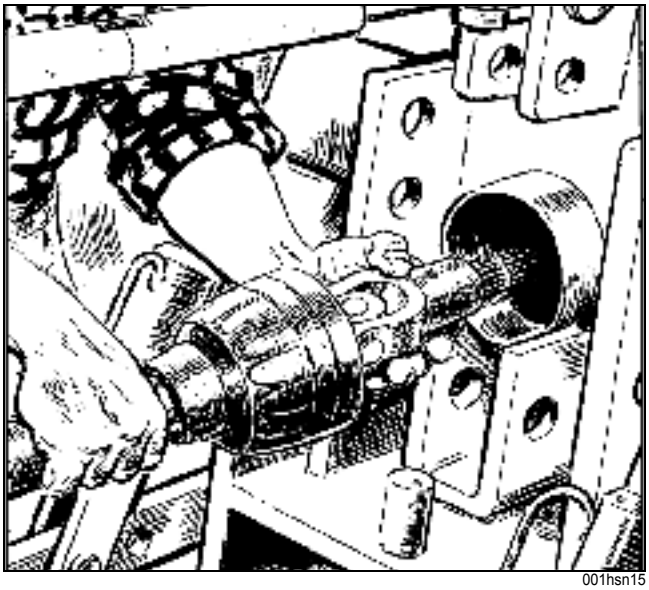
Do not wear loose clothing which could catch in moving parts.

The engine must be stopped before coupling or uncoupling the attachment's universal joint shaft.

All guards must be fitted when working.

When repairing, adjusting or lubricating an attachment in the field, always set the PTO lever to neutral and stop the engine.

When the PTO is not in use, set the lever to neutral (shaft stationary) and fit the protection cover.


001hsn15

TOXIC PRODUCTS

A tractor uses a number of fluids: Diesel, Diester, transmission oil, brakes and linkage fluid, engine oil, liquid for tyre ballast etc. In the event of an accidental leak of one of these liquids causing pollution to foodstuffs (for human or animal consumption), such as vegetables, silage, hay, pellets etc., destroy the contaminated products, because it is dangerous to ingest them.

Certain products used to treat crops are particularly dangerous.

Always read the instructions for the use of these products carefully and follow them scrupulously.

In certain cases, the user must protect himself against any contact with the product.

The cab air filter is only a dust filter. It gives no protection against treatment product gases or mist.


001hsn16

AIR CONDITIONING

The air conditioning system contains a gas which can be dangerous under certain conditions.

RECOMMENDATIONS:

Never work on the air conditioning.

If a leak occurs, prevent any concentration of the gas (in a closed building, in the cab, etc.). Avoid any contact between the gas and hot articles. Do not smoke.

IMPORTANT

It is recommended to keep a fire extinguisher and a first-aid kit ready to hand.

001hsn16

SAFETY CABS

Our safety cabs have successfully undergone the official E.E.C. and O.E.C.D. tests. As a result of these tests they have been officially approved. They fully satisfy these tests.

Consequently, CLAAS disclaims responsibility for any accident (impact or overturning) which applies loads greater than those required by the tests to the structure.

Any safety structure which has been damaged (distorted) in an accident must be replaced, not repaired.
If you want to add equipment or functions not provided as standard or available as after-sales options, always contact your CLAAS agent. It is important to obtain his advice since it is forbidden to drill, weld or cut any of the safety structure components since this would change the cab characteristics and it would then no longer have official approval.

001hsn17

SAFETY STICKERS WITH WARNING PICTOGRAMS

Warning stickers are placed at all the dangerous points on the machine (according to regulations in force in the country). The pictograms represented on these stickers are to warn about risks of injury, and they show the correct attitude to adopt to avoid injury and accidents. The correct position to place these stickers on the machine will be found in the following pages along with a short explanation.

A - Before using or working on the machine read the safety rules in the user's manual.

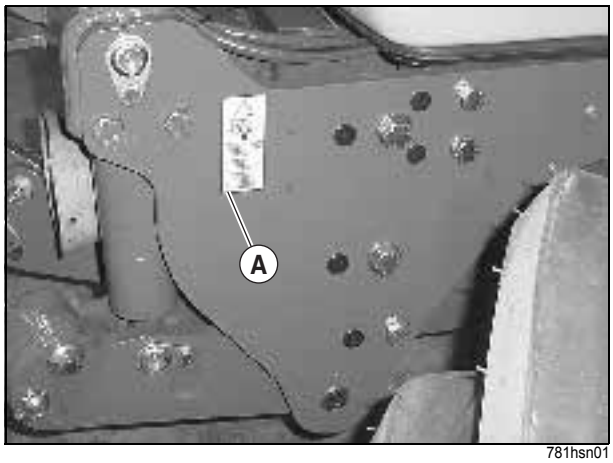
B - Do not exert a traction greater than 3 metric tons on the front hitch hook.

C - Safety (according to equipment ARES 826 FPS):

- If you have to leave the driving seat when the engine is still running, make sure that you carefully observe all the safety instructions.
- Refer to the chapter "Selecting neutral in the gear box" in the tractor user's manual.

D - WARNING:

- Read the user's manual carefully before using the tractor.
- Take account of the instructions and safety rules, and always use the tractor with great care.



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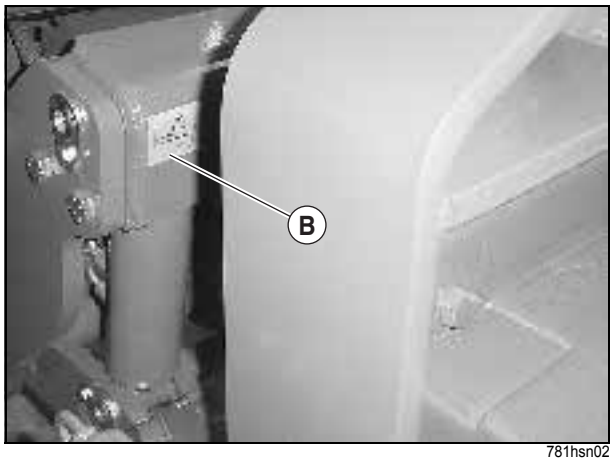


781hsn02

781hsn03

781hns04

E - WARNING: This tractor must not travel at a speed greater than 30 km/h on public roads.

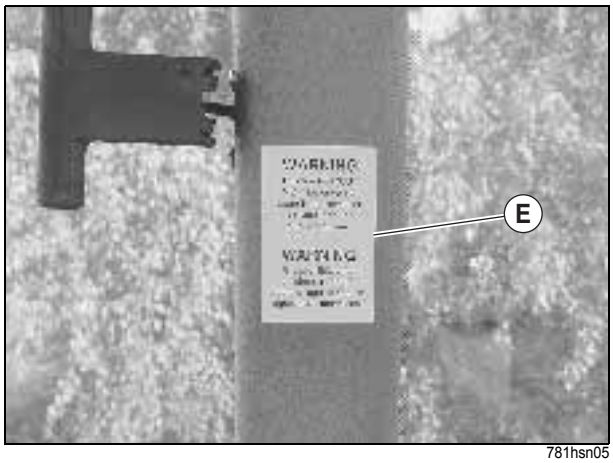
WARNING: It is forbidden to transport a child under 13 years of age on farm machinery.

F - WARNING:

- This tractor's air conditioning is charged with freon R 134 A, which is a toxic gas when exposed to the open air.
- Do not discharge the system without the appropriate equipment.

G - WARNING: The power take-off must not be used at 1000 rpm unless the implement is designed to run at this speed (see the user's manual).

H - WARNING: To prevent accidents. Disconnect the hydraulic hoses (of the grab hook) from the distributors immediately after locking on the implement.



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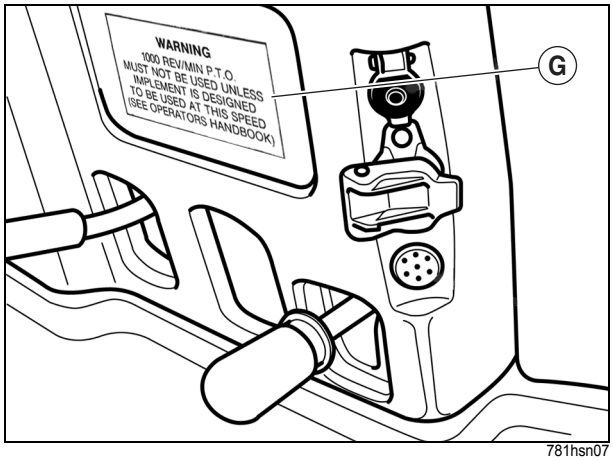


781hsn07

781hsn08

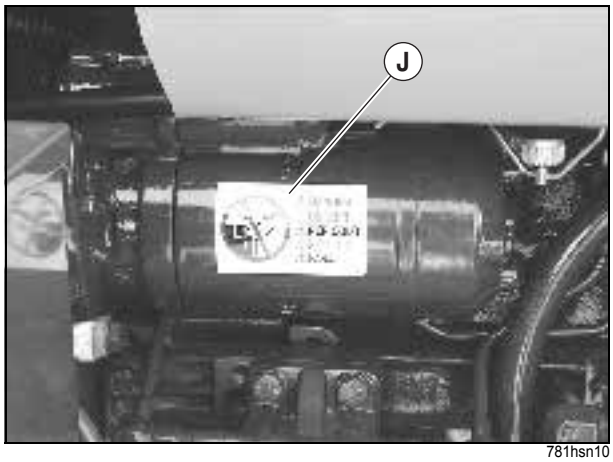
I - WARNING: Keep the linkage clear when you are using the external controls.

J - Danger: Do not place the starter terminals in contact with a tool that conducts electricity (danger of sparks).

K - Do not discard a worn battery but take it to a recycling collection point.

L - Danger: To prevent any damage to the eyes, never look at the surface of the radar sensor when it is activated.

781hsn09



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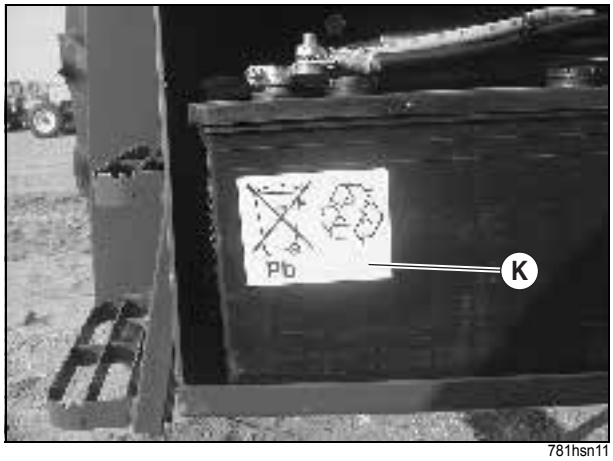

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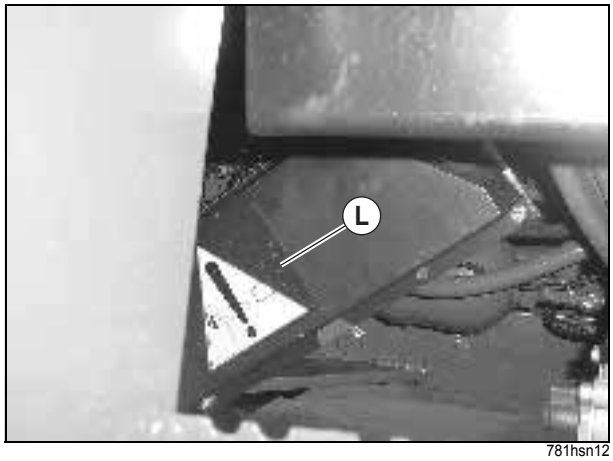
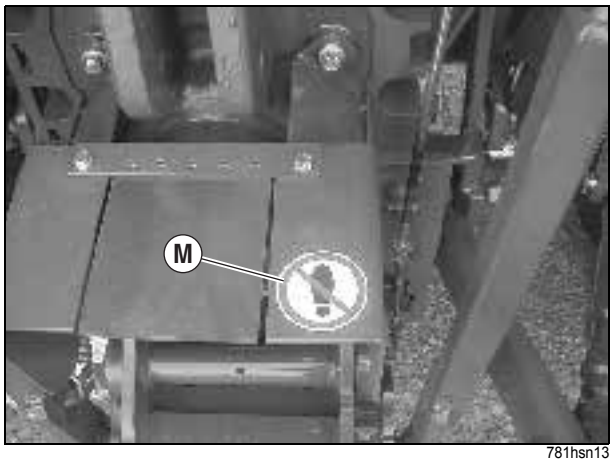


781hsn12

M - Never place a foot on the protector, to avoid risks of breakage and getting caught up in the power take-off.



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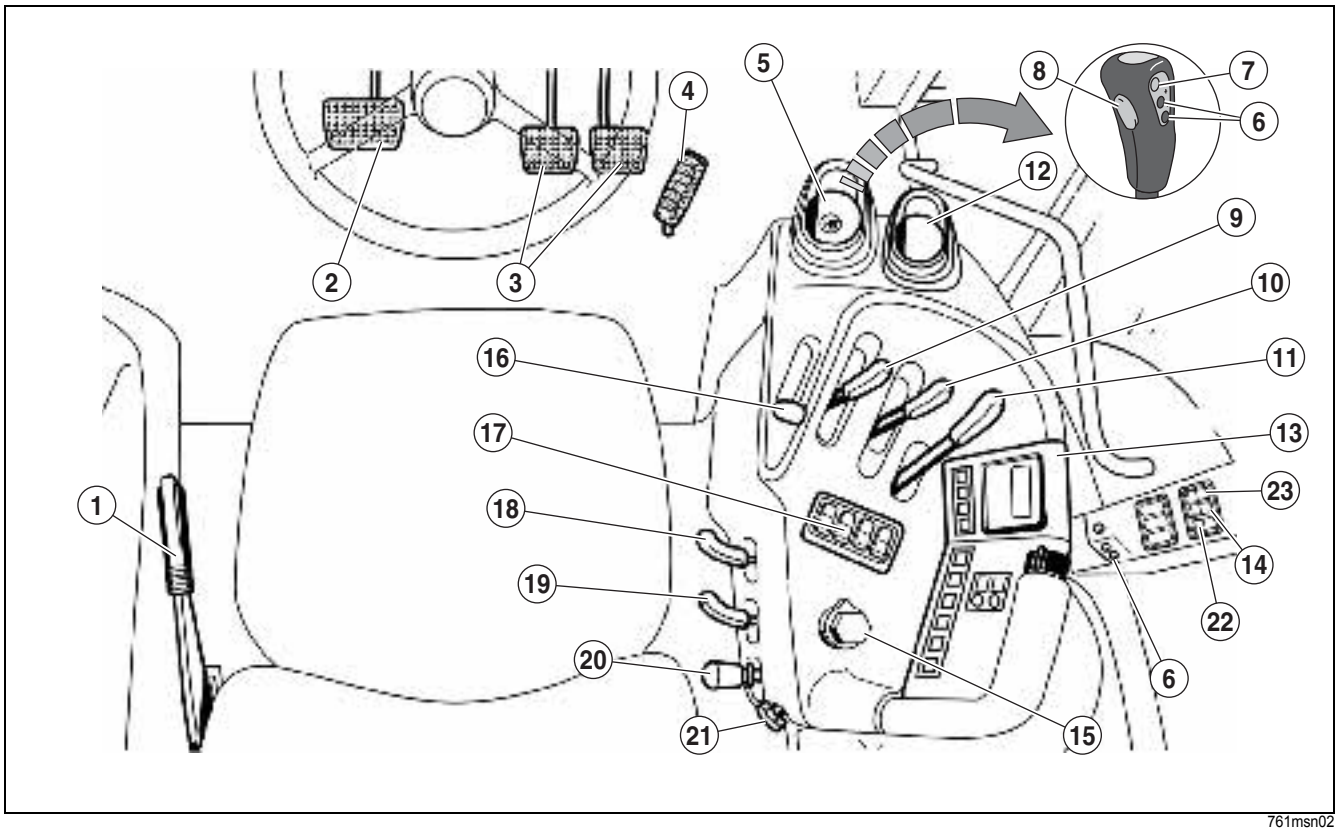
Notes

B - CAB

INSTRUMENTS AND CONTROLS (DRIVING POSITION)

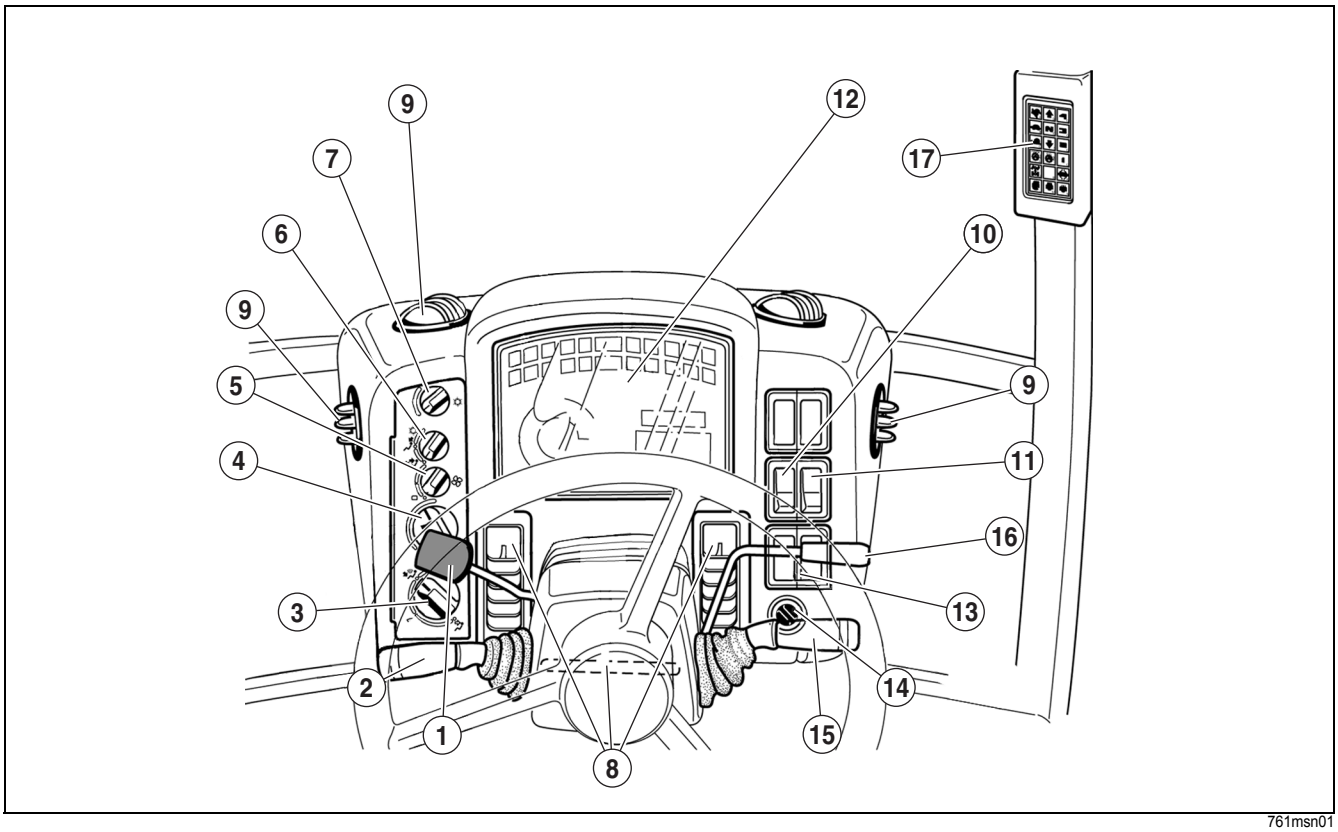


761msn02

1 - Hand brake lever.
2 - Clutch pedal.
3 - Brake pedals.
4 - Accelerator pedal.
5 - Gear and range lever.
6 - Quadrupler impulse switches.
7 - Range switch.
8 - Clutch switch.
9 - Auxiliary distributor 1.
10 - Auxiliary distributor 2.
11 - Auxiliary distributor 3.
12 - Configuration spool valve control.
13 - Control box for electro-hydraulic linkage.
14 - Quadractiv switch.
15 - Rear power take-off engagement button.
16 - Manual accelerator lever.
17 - Set of switches:
- Front axle engagement.
- Engagement of rear axle differential lock (front and rear axles only on ARES 696).
- Suspended front axle.

18 - Crawler range selection lever.
19 - Economy power take-off speed selector lever.
20 - Power take-off lever speed selection lever 540/1000 rpm.
21 - Electric socket for connecting implements (12V/25 A).
22 - Quadrishift switch II (with its warning light.
23 - Front power take-off engagement switch.

INSTRUMENTS AND CONTROLS (DASHBOARD)



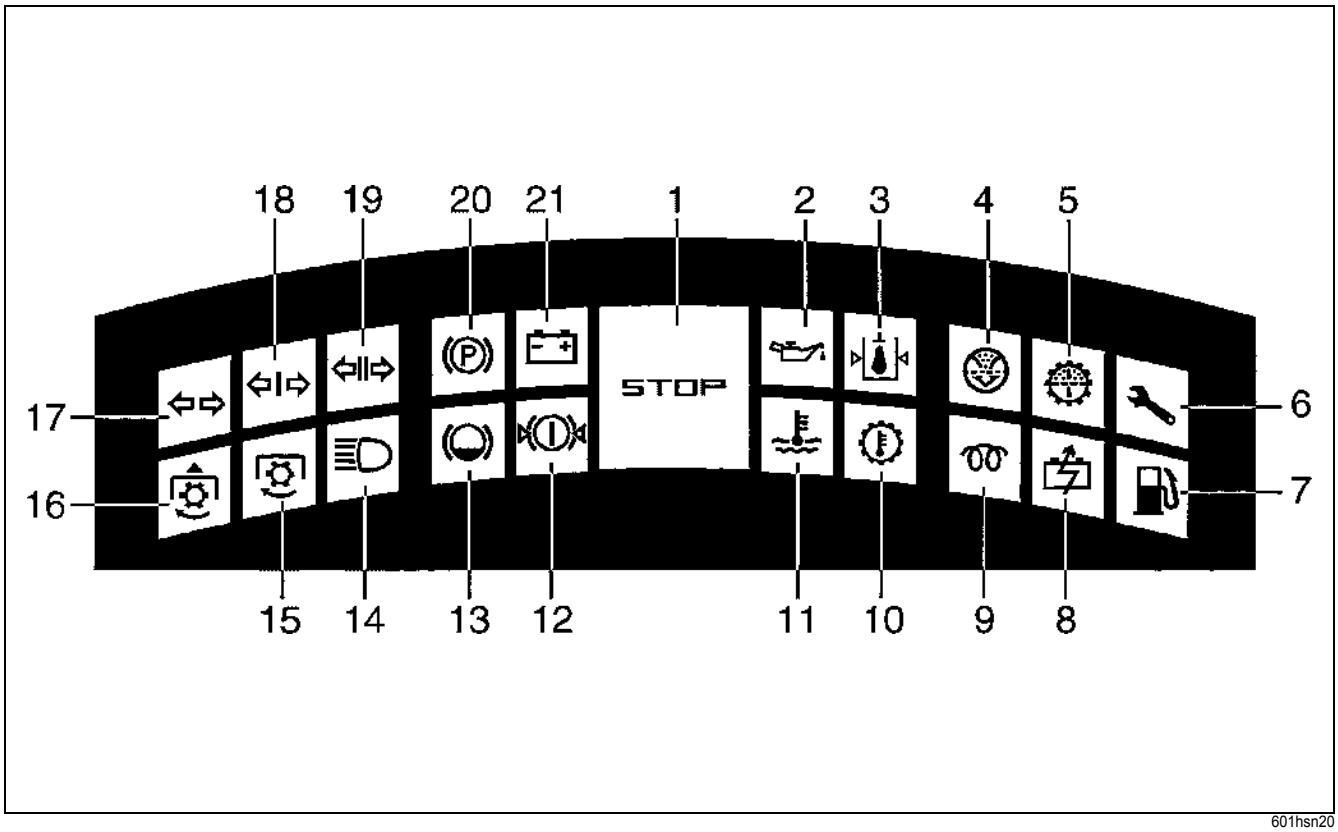
761msn01

1 - Reverser lever under torque.
2 - Multifunction control:
- Direction indicators.
- Lights.
- Horn.

3 - Air distribution adjustment knob.
4 - Heating temperature adjustment knob.
5 - Fan speed adjustment knob.
6 - Heating, ventilation and air conditioning functions selector knob.
7 - Cooling temperature adjusting knob.
8 - Heating vents.
9 - Windscreen defrosting vents.
10 - Rotating beacon control switch.
11 - Hazard flasher switch.
12 - Instrument panel.
13 - Spare position.
14 - Main switch (key operated).
15 - Multifunction control:
- Front screen wiper.
- Front screen washer.
- Digital display (instrument panel).

16 - Steering wheel adjuster.
17 - Transmission display.

WARNING LIGHTS



601hsn20

1 - STOP warning light (emergency stop).
2 - Oil pressure warning light.
3 - Hydraulic circuit and rear axle lubrication low pressure warning light.
4 - Blocked dry type air filter warning light.
5 - Blocked hydraulic circuit filter elements warning light.
6 - Service due warning light.
7 - Fuel level warning light.
8 - Battery state warning light and transmission diagnosis light.
9 - Preheat warning light.
10 - Transmission oil temperature warning light.
11 - Engine coolant temperature warning light.
12 - Spare warning light.
13 - Brake fluid level warning light.
14 - Main beam warning light.
15 - Rear power take-off warning light.
16 - Front power take-off warning light.
17 - Tractor direction indicators warning light.
18 - 1st trailer direction indicators warning light.
19 - 2nd trailer direction indicators warning light.
20 - Hand brake warning light.
21 - Battery charge warning light.

ALARMS

RED "PRIMARY ALARM" LIGHTS

STOP WARNING LIGHT (1)

The flashing of the "STOP" (1) warning light with (2), (3), (10), (11), (13), (20) and (21) plus the buzzer indicates a serious defect. It is IMPERATIVE that you stop IMMEDIATELY, in respect for conditions of use and traffic.

ENGINE OIL PRESSURE WARNING LIGHT (2)

If the oil pressure warning light comes on stop immediately and check the engine oil level. If the level is too low (below the minimum mark) add some oil. If the warning light stays on and the oil level is normal, consult your approved CLAAS agent.

HYDRAULIC FLUID PRESSURE INDICATOR (3)

If the light comes on during use, it means that there is insufficient control pressure or rear axle lubrication. Refer to your approved CLAAS repair agent.

TRANSMISSION OIL TEMPERATURE WARNING LIGHT (10)

This warning light comes on when the transmission (hydraulic) oil temperature is too high. Check the cleanliness of the oil cooler at the front of the tractor and clean if necessary. Start up again if the indicator comes on again (cooler clean), "Stop the engine immediately". Contact your approved CLAAS repairer.

ENGINE COOLANT TEMPERATURE WARNING LIGHT (11)

If the engine coolant temperature warning light comes on, STOP THE ENGINE IMMEDIATELY. This means that there is over-heating, in this case, check the following points:

1 - Radiator and radiator grilles: Clean if there is any clogging (dust, plant material, etc).

2 - Water pump belt: Check that the belt is not loose or snapped.

3 - Coolant level in the radiator.

To carry out these operations, refer to chapter L.

If it still overheats, contact your approved CLAAS agent.

BRAKE FLUID LEVEL WARNING LIGHT (13)

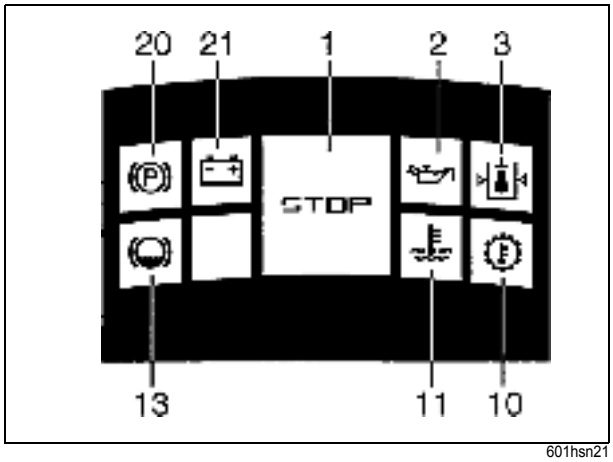
When the brake fluid level is too low,the warning light comes on. "Stop immediately" and consult your approved CLAAS agent.

HAND BRAKE WARNING LIGHT (20)

When this warning light is on it shows that the hand brake is in use . If the reverser lever is engaged in forward or reverse with the hand brake on, an alarm sounds.

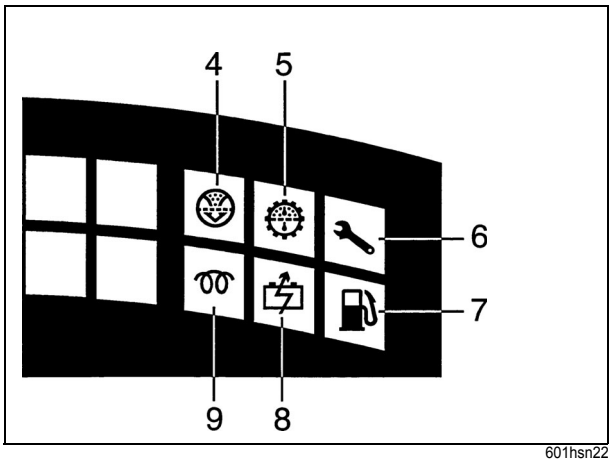
BATTERY CHARGE WARNING LIGHT (21)

If the charging light comes on, check the condition and tension of the alternator belt. If these are normal, the alternator or regulator may be defective. Have these units checked by your CLAAS approved repairer.



601hsn21

ORANGE "CAUTION" LIGHTS



601hsn22

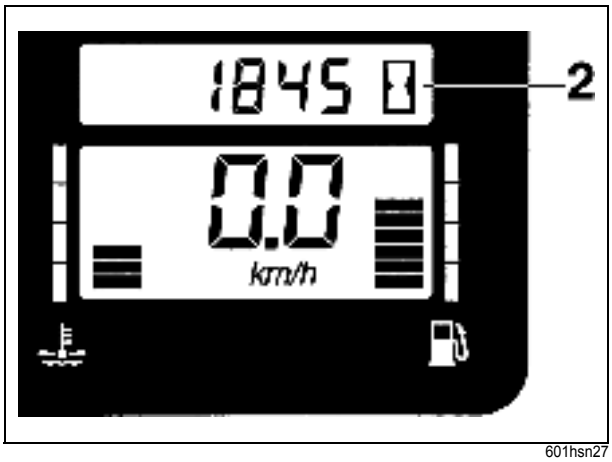
BLOCKED DRY-TYPE AIR FILTER ELEMENT WARNING LIGHT (4)

When this warning light comes on, clean the main filter element or replace the filter elements if they are coming to the end of their service life. To carry out these operations, refer to chapter L.

HYDRAULIC CIRCUIT CLOGGING INDICATOR (5)

If the clogging indicator (5) comes on during work, this means that the hydraulic circuit filter is clogged: There may be clogging of the air intake strainer or the high pressure hydraulic filters. (Replacement of filter elements: See chapter L).

Note: Starting the tractor in cold weather with the transmission oil temperature too low (high viscosity) can cause this light to come on. The light should go out after several minutes' use; if this does not happen, follow the above instructions.



601hsn27

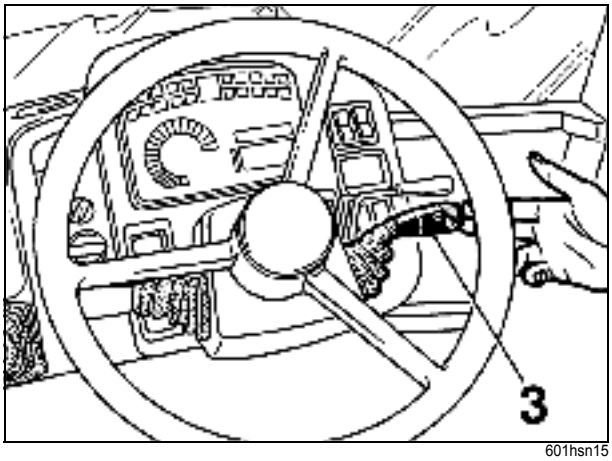
SERVICE DUE WARNING LIGHT (6)

When this warning light comes on, it is telling you that the tractor maintenance (every 500 hours) is due.
When the service has been done, turn the light off (see "Turning off procedure" in this chapter).

Note: * During the guarantee period this light will come on after the first 100 and 500 hours of use and then every 500 hours thereafter.

PROCEDURE FOR TURNING THE SERVICE DUE WARNING LIST OFF

Select on display panel (2) the "total hour meter" mode. Press for 4 seconds on lever (3), and the maintenance warning light (6) goes out automatically.



601hsn15

FUEL LEVEL WARNING LIGHT (7)

This light comes on when the quantity of fuel in the tank is less than 40 litres.

PREHEAT WARNING LIGHT (9)

The automatic pre-heating warning light comes on each time you switch on and goes out when pre-heating is complete. This light depends on the ambient temperature.

BATTERY STATE WARNING LIGHT (8)

This light comes on when the battery voltage is below 10,5. Low voltage causes some malfunctions. Have the battery and the electrical circuit checked by your approved CLAAS dealer. The Drivetronic controls the correct operation of the transmission. The state of the diagnostic indicator (8) can indicate 3 cases of anomalies:

1. Diagnostic indicator flashes slowly

When the defect appears, the tractor reacts jerkily during operations. In spite of this, work can continue. This defect can make it impossible to change direction.

2. Diagnostic indicator flashes rapidly + alarm

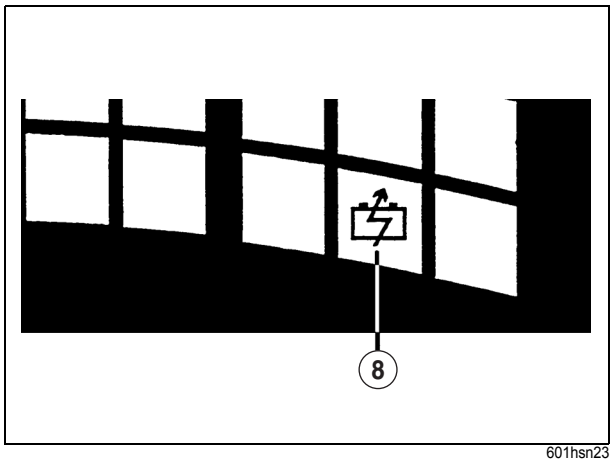
In this situation, do not place the reverser lever (F) in neutral (II), or declutch to change gear with the lever (F) or switch (H) located on the gear lever (A) because you risk completely immobilising the tractor. If you have to stop, use only the clutch pedal (G).

You can only travel in one direction, the one engaged when the defect appeared. If you have to move the tractor, take all necessary precautions, remembering that no reversal of direction will be possible.

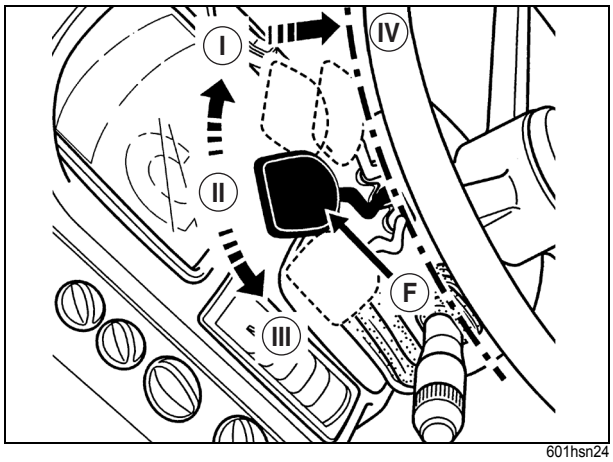
3. Diagnostic indicator on permanently + alarm

In this situation, the tractor is immobilized and the neutral indicator is steady on. This state is the transmission being placed in safety by the Drivetonic.

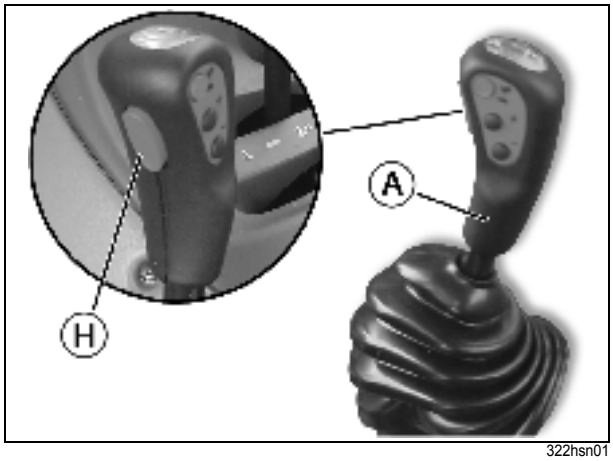
Important: If one of the defects described above occurs during tractor operation, consult your CLAAS approved repair agant.



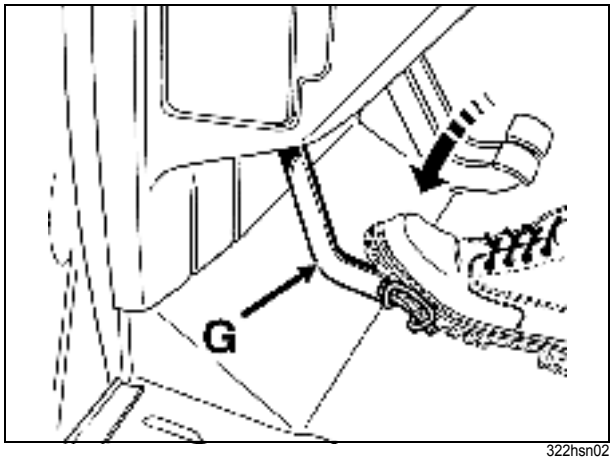
601hsn23



601hsn24



322hsn01



322hsn02

REAR POWER TAKE-OFF WARNING LIGHT (15)

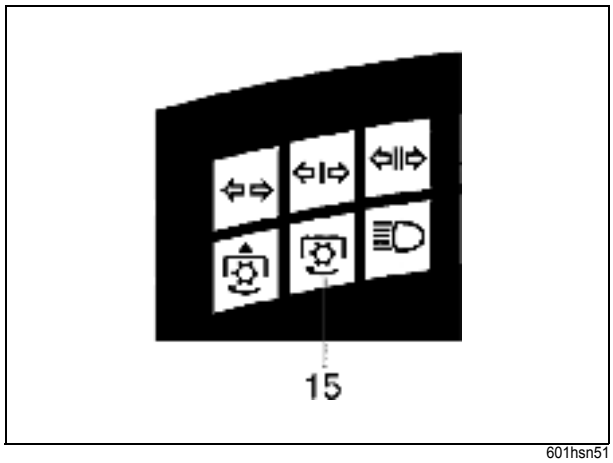
The Drivetonic controls the engagement and disengagement of the rear power take-off in the following situations:

When the tractor starts up, the power take-off cannot start even if the control button is set in the engaged position (1).

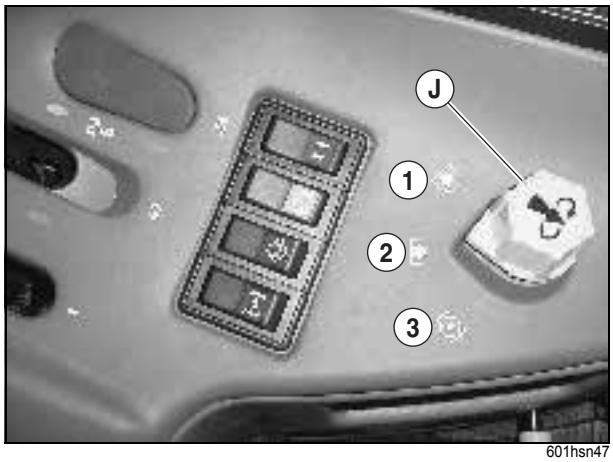
If the instrument is blocked or shows excessive inertia, the Drivetonic disengages or refuses to engage the power take-off.

If during use the clutch slips excessively, the Drivetonic disengages the rear power take-off.

In these cases, the indicator (15) flashes. Replace control button (J) in position (2) and again in position (1) after reducing the engine speed. If indicator (15) continues to flash, consult your approved CLAAS agent.

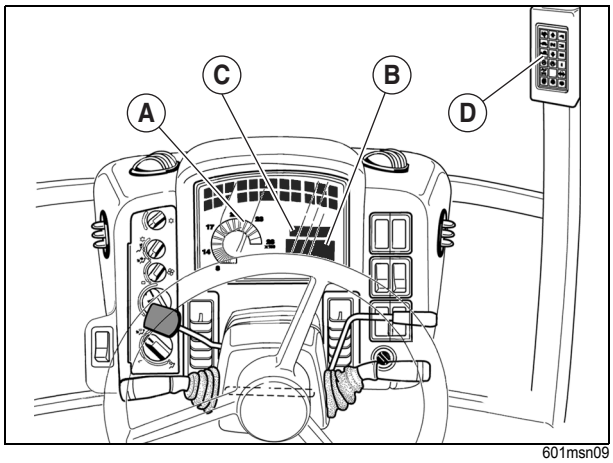


601hsn51



601hsn47

INSTRUMENTS



601msn09

A - TACHOMETER

B - DIGITAL DISPLAY

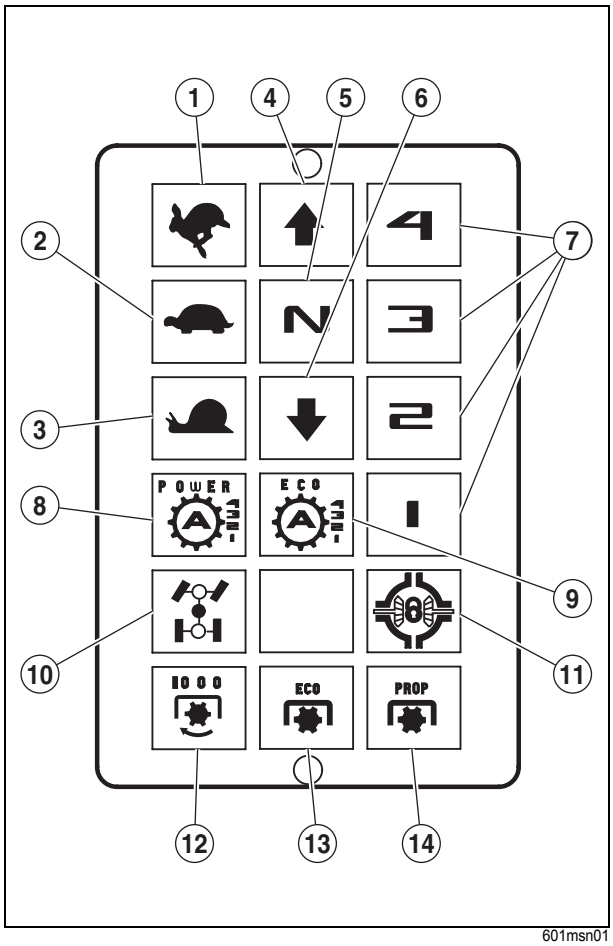
- Real or theoretical forward speed.
- Coolant temperature indicator.
- Fuel level indicator.

C - DIGITAL DISPLAY

- Engine speed (rpm).
- Rear power take-off speed (rpm).
- Front power take-off speed (rpm).
- Total hour meter.
- Trip hour meter.

D - TRANSMISSION DISPLAY

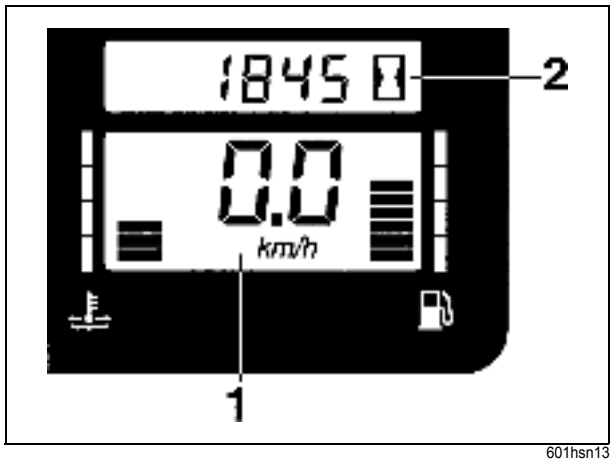
1 - Road range selected.
2 - Field range selected.
3 - Crawling range selected.
4 - Forward gear indication.
5 - Neutral position indication.
6 - Reverse gear indication.
7 - Engagement of selected torque ratio.
8 - Engagement of POWER mode of Quadractiv.
9 - Engagement of economical mode of Quadractiv.
10 - Front axle engagement.
11 - Engagement of differential(s).
12 - Engagement of 1000 rpm power take-off.
13 - Engagement of economy power take-off.
14 - Engagement of power take-off proportional to advance.



601msn01

DIGITAL DISPLAYS

Your dashboard instrument panel is equipped with 2 digital displays (1) and (2) which allow the following information to be read accurately:



601hsn13

DIGITAL DISPLAY (1)

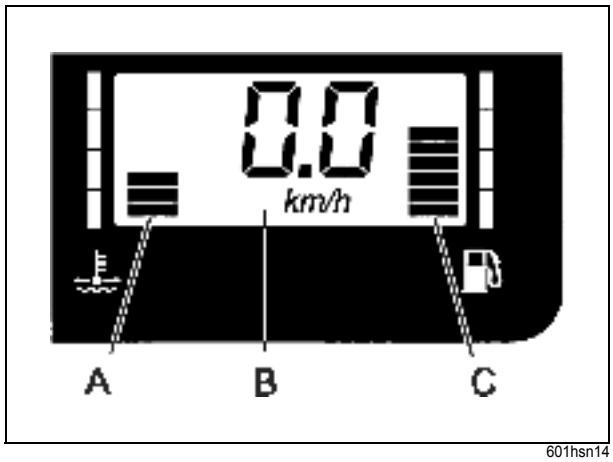
When ignition is turned on, the display (1) illuminates and indicates the following information:

A - Coolant temperature indicator.

B - Real or theoretical forward speed.

C - Fuel level indicator.

Note: If the tractor is fitted with a radar (TCE 25), digital display (1) indicates the real speed measured by the radar. If there is no radar (TCE 15 - TCE 15 T), the theoretical speed measured in the transmission is indicated.



601hsn14

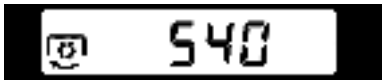
DIGITAL DISPLAY (2)

When ignition is turned on, the display (2) illuminates and indicates the number of service hours performed.

Successive pressing on the (3) key scrolls down the following information.

- Engine speed (rpm).

- Rear power take-off speed (rpm).



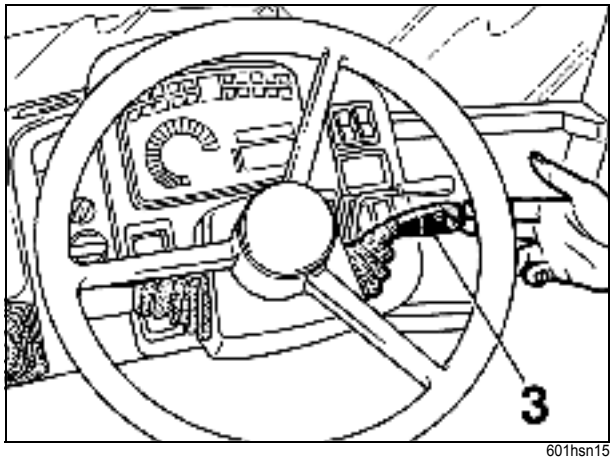
- Front power take-off speed (rpm)

- Total hour meter.

- Trip hour meter.

To reset the trip hour meter:

- Select the "trip hour meter" mode.
- Press the lever (3) for 4 seconds, automatic reset takes place.



601hsn15

"FORWARD SPEED" COMPUTER CALIBRATION PROCEDURE

The forward speed computer must be calibrated when you change the size of your tractor's rear tyres.

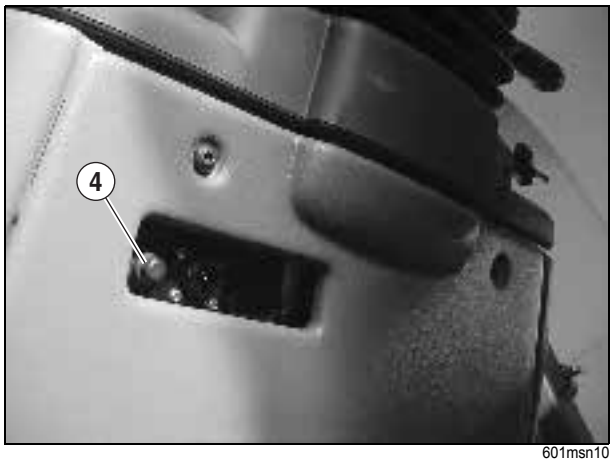
Note: The original calibration is carried out with new tyres. Recalibrating the computer is recommended as the tyres wear.

PROCEDURE

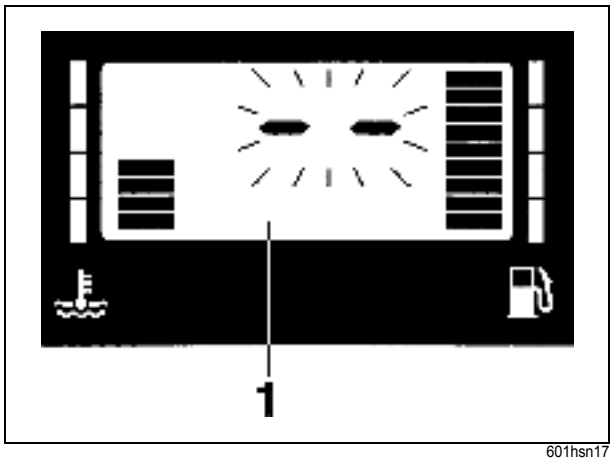
- Drive the tractor to a straight, dry black-coat road between two markers 100 meters apart.
- Stop the tractor at approximately 15 to 20 meters before the first marker.
- Then, remove the plastic paneling (clipped under the instrument panel) (4).
- Press this button for at least 5 seconds and 2 horizontal dashes appear on the digital display (1): These show that the computer is in calibration mode.
- Select a gear making it possible to reach an average speed of 7 km/h.
- Use the clutch and accelerator manually to keep to a stable forward speed.
- As you pass over the first mark, press button (4), the 2 horizontal dashes start to flash (calibration in progress).
- As you pass over the second mark, press button (4) once more.
- To validate the calibration turn off the engine, then remove the two marker 7 and marker 21 fuses for a minimum of 30 seconds (see chapter C).
- Reinsert these 2 fuses and the computer will be calibrated for the new set of tyres.

Note: If the calibration phase lasts for more than 2 minutes, the time taken between the 2 presses on switch (4), the digital display shows "Er". Return to normal mode by pressing lever (3), and the previous calibration is saved.

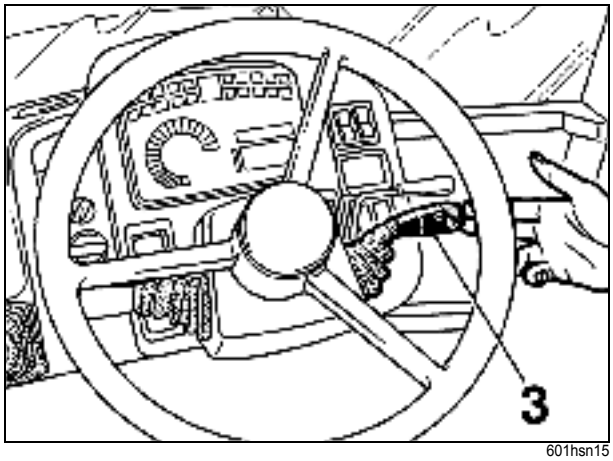
During calibration, if the display panel also indicates "Er" (e.g. : you cover 300 meters instead of 100 meters), return to normal mode by lever (3).



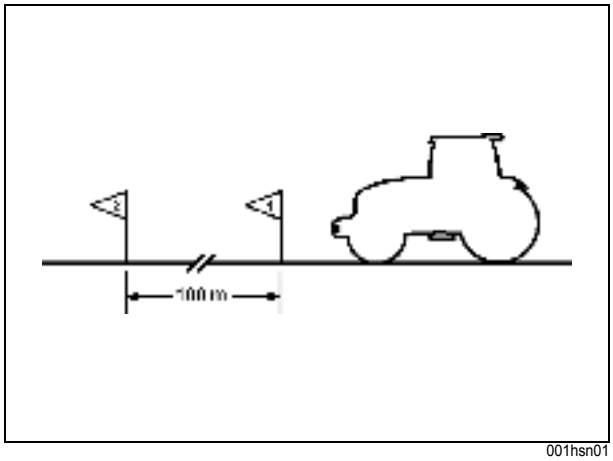
601msn10



601hsn17

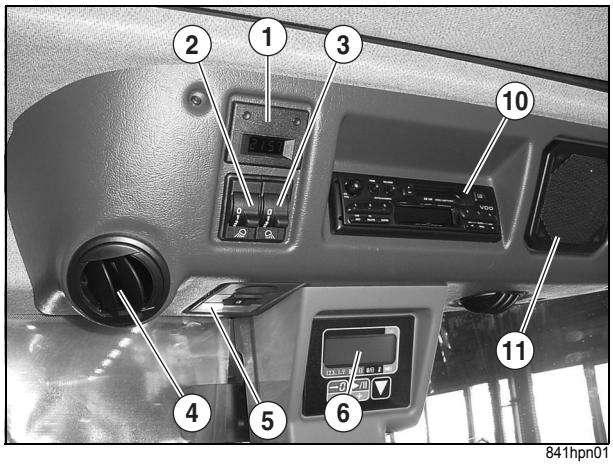


601hsn15



001hsn01

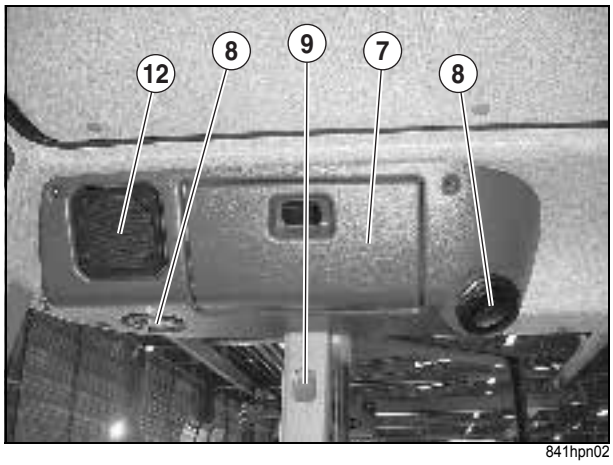
CONTROLS AND ACCESSORIES IN THE CAB ROOF



841hpn01

RIGHT-HAND SIDE

1 - Digital clock.
2 - Front working lights switch.
3 - Rear working lights switch.
4 - Side vent.
5 - Roof lamp.
6 - On board computer (see chapter I).



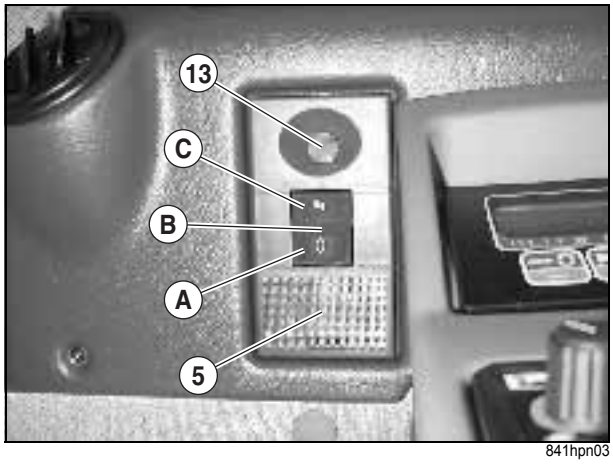
841hpn02

LEFT-HAND SIDE

7 - Cubby/refrigerated drinks compartment.
8 - Side vent.
9 - Coat hook.

RADIO

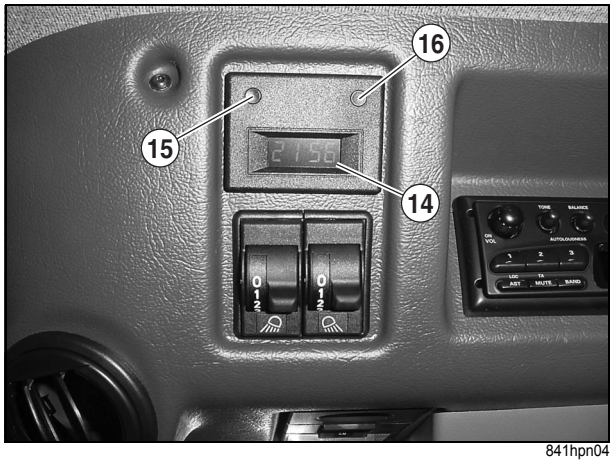
10 - Car-radio.
11 - Right-hand loudspeaker.
12 - Left-hand loudspeaker.



841hpn03

ROOF LAMP AND SPOTLIGHT

The different switch (B) positions give:
A - Roof lamp (5) is on permanently.
B - Lamp coming on when either door is opened.
C - Spotlight (13) on permanently.



841hpn04

DIGITAL CLOCK

To set the time of clock (14), press the key.
- (15) for hours.
- (16) for minutes.

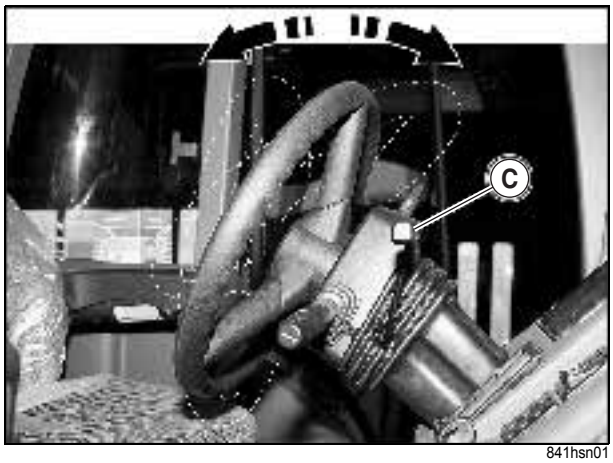
OTHER CONTROLS AND ACCESSORIES

ADJUSTABLE STEERING COLUMN

The height and rake of the steering wheel are adjusted using the lever (C).

To change the steering wheel rake, lower lever (C), move the steering wheel to the required position and release the lever.

To change the height of the steering wheel, lift lever (C), bring the steering wheel to the required position and release the lever.



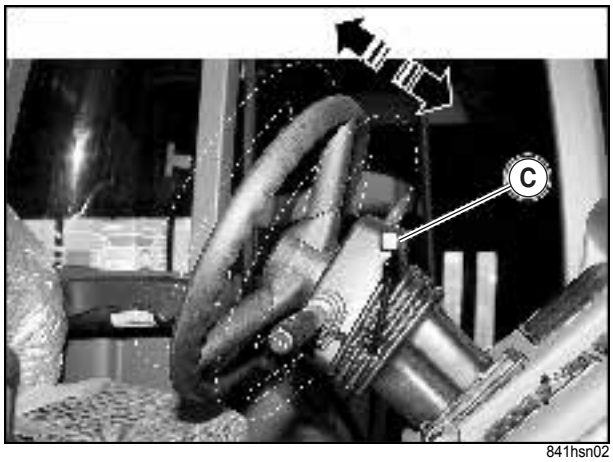
841hsn01

WINDSCREEN WIPER AND WASHER

The windscreen wiper lever (E) has 3 positions:

- Position 0: Stop.
- Position 1: Intermittent wipe (every 10 seconds).
- Position 2: Continuous wipe.

The windscreen washer is controlled by wheel (F) positioned at the end of lever (E). Turn wheel (F) clockwise until there is enough washer fluid on the windscreen.

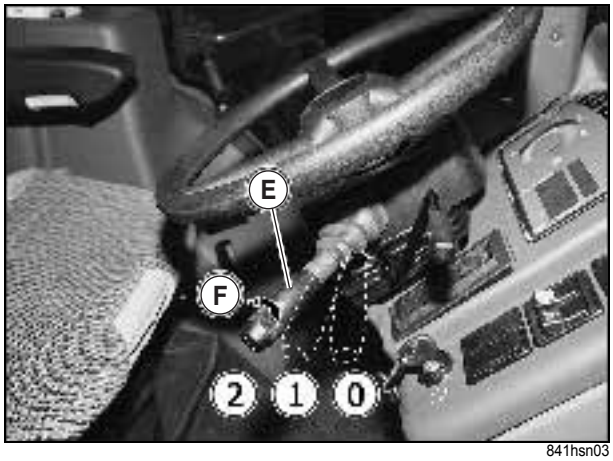


841hsn02

REAR WINDOW WIPER

The rear window wiper switch (A) has 3 positions:

- Position 0: Stop.
- Position 1: Continuous wipe.
- Position 2: Windscreen washer.



841hsn03

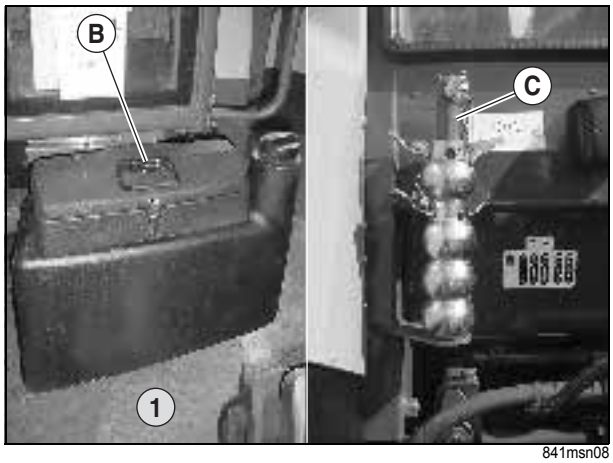
841hpn15

TOOL BOX

The toolbox (B) is located in front of the left-hand step. It is fitted on the fuel tank and is removable.

1 - Fuel tank range ARES 500.

2 - Fuel tank range ARES 600.



841msn08

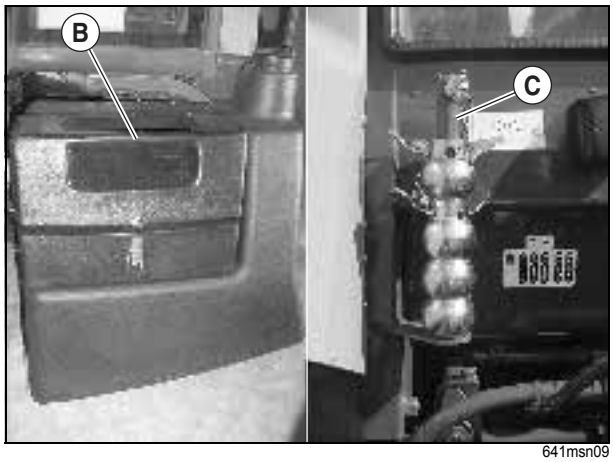
HITCH MOUNTING

A mounting (C) at the rear of the tractor takes trailer hitches when they are not being used.

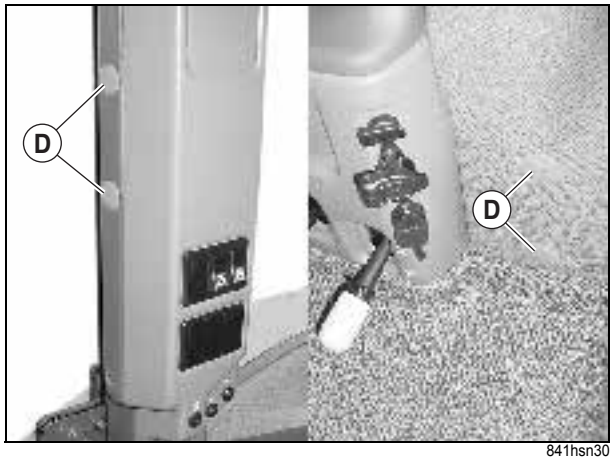
PREFITMENTS FOR INSTALLING A CONTROL BOX IN THE CAB

FITTING BOX MOUNTING

Tools such as sprayers, seed drills, etc. are often equipped with a cab-mounted control box. To make it easier to fit control box mountings, there are threaded holes on the right-hand side and up-mount of the cab under the plugs (D).



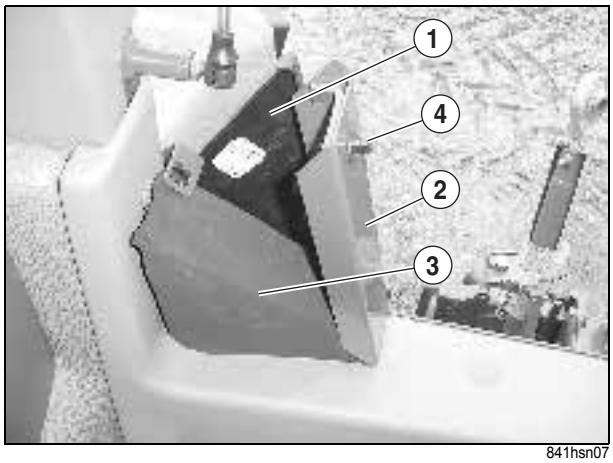
641msn09



841hsn30

CABLE WAYS

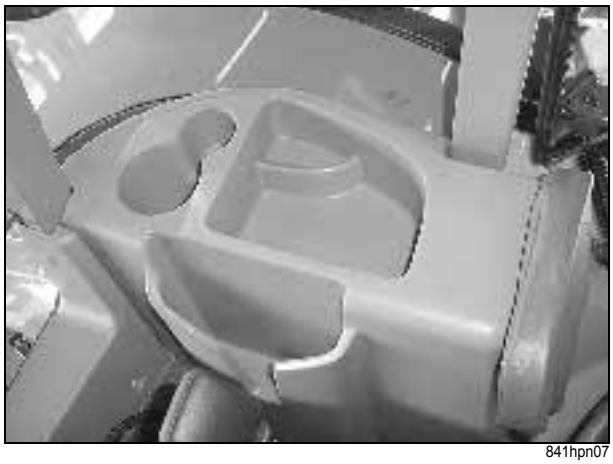
- A panel (1) for cables to pass through is fitted in the lower part of the rear hatch.
- Open the rear hatch.
- Turn the quick-release fastener (4) through 1/4.
- Swing the crossbar (2) away.
- Remove foam (3).
- Fit the control box wiring harnesses and replace parts (1) and (2). If the harness does not take up much room, replace the block of foam (3).
- Close the rear hatch.



841hsn07

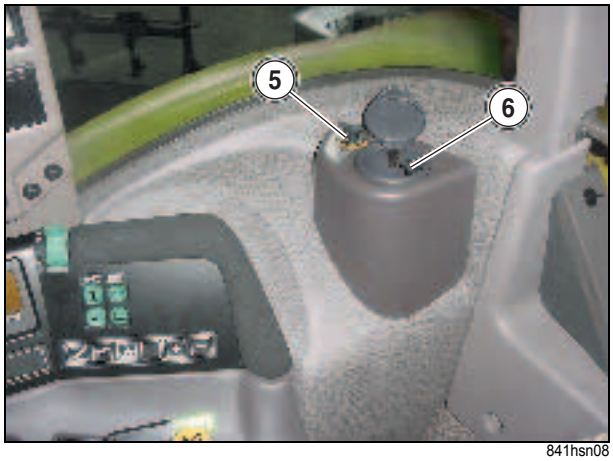
STORAGE BIN

Positioned to the left of the seat, it is used for storing papers, objects and bottles.


841hpn07

CIGAR LIGHTER AND ASHTRAY

Cigar lighter (5) and ashtray (6) are positioned on the right-hand cabin console.



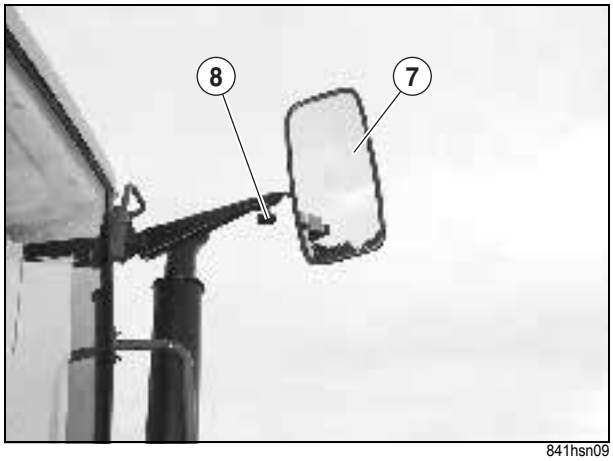
841hsn08

TELESCOPIC REAR VIEW MIRRORS

ADJUSTMENT

To extend the telescopic arm of the mirror (7), unscrew wheel (8).

Before going on the road, check the mirrors are adjusted correctly. For safety reasons, make this adjustment when the tractor is stationary.



841hsn09

DRIVER'S SEAT

COMFORT SEAT

1 - Longitudinal adjustment: Lift lever (1) to release the lock. At the chosen position, release the lever and check the lock is engaged.

2 - Horizontal damper: To be used to absorb longitudinal accelerations due to the use of the tractor on tracks and, generally, for all work at more than 7 Km/h.

3 - Seat swivelling adjustment: Pull the handle (3) up to allow seat rotation around its vertical axis.

4 - Backrest angle adjustment.

5 - Adjustable headrest.

6 - Armrest angle adjustment.

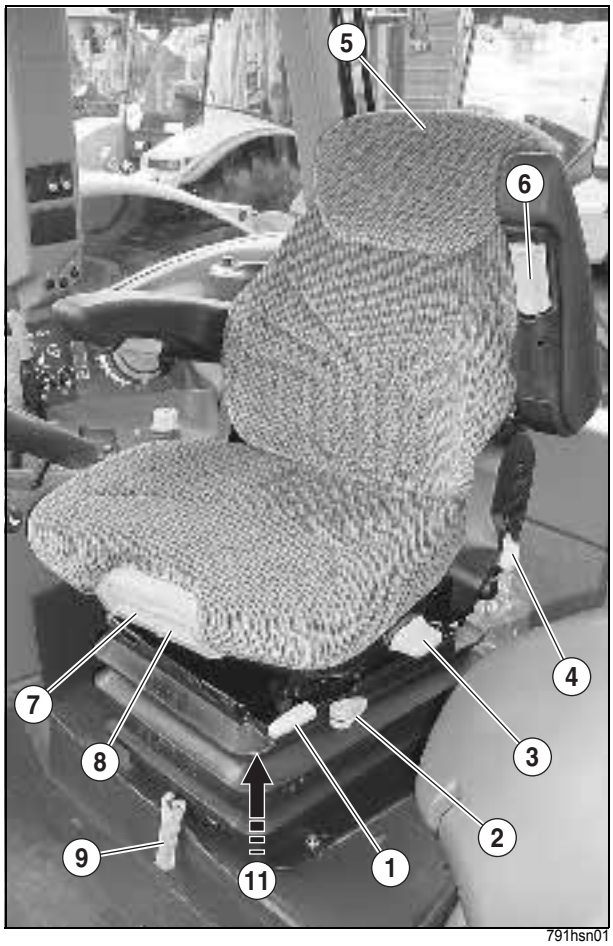
7 - Seat depth adjustment.

8 - Seat angle adjustment.

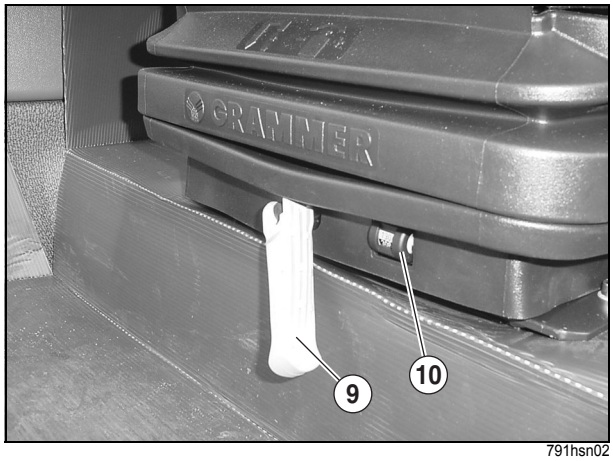
9 - Seat height adjustment. To adjust the height, turn the handle (9) clockwise to move the seat up, and counterclockwise to move it down.

10 - Indicator for the seat adjustment according to the driver's weight.

11 - Seat height setting (3 positions). Pull the seat upwards.



791hsn01



791hsn02

PNEUMATIC SEAT

1 - Longitudinal adjustment: Lift lever (1) to release the lock. At the chosen position, release the lever and check the lock is engaged.

2 - Horizontal damper: To be used to absorb longitudinal accelerations due to the use of the tractor on tracks and, generally, for all work at more than 7 Km/h.

3 - Height adjustment: Pull the handle (3) once to adjust the weight. Wait for calibration to be completed, then pull the handle up or down to adjust the seat height.

4 - Backrest angle adjustment.

5 - Armrest angle adjustment.

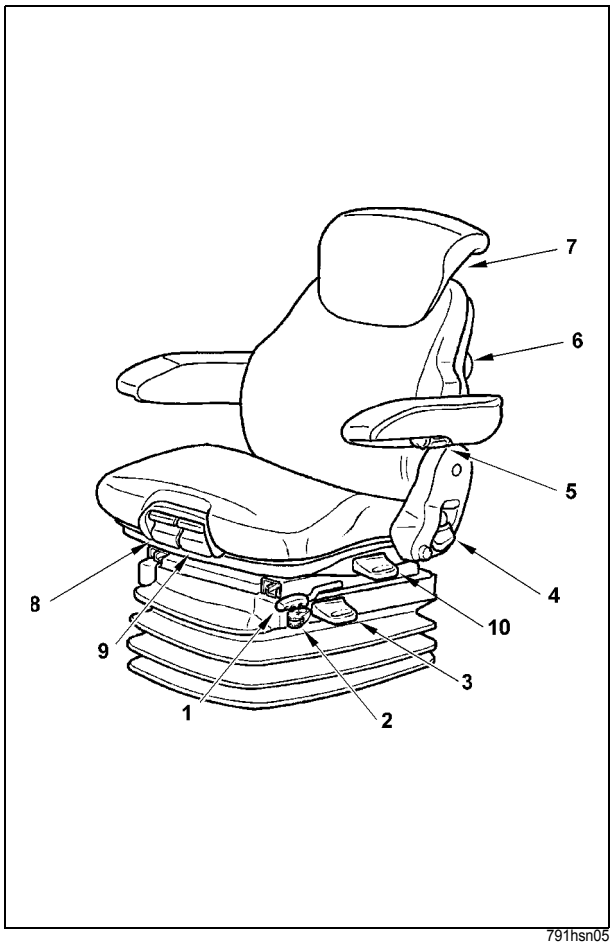
6 - Low backrest adjustment: Turn the handle to the left or to the right to obtain low back support in height or depth.

7 - Adjustable headrest.

8 - Seat depth adjustment.

9 - Seat angle adjustment.

10 - Seat swivelling adjustment: Pull the handle (10) up to allow seat rotation around its vertical axis.



791hsn05

PASSENGER SEAT

Positioned on the left of the driver it is essential for carrying a passenger.

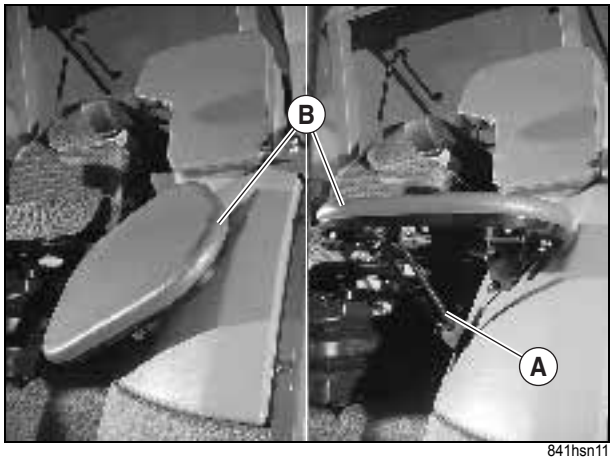
To unfold the passenger seat:

1 - Raise seat (B).

2 - Position the holding rod (A) on its support.

When carrying a passenger it is obligatory to travel with the doors correctly closed.

Never leave a child (or animal) in your vehicle with the key in the ignition. A child or animal could start the engine or operate electrical or hydraulic equipment.



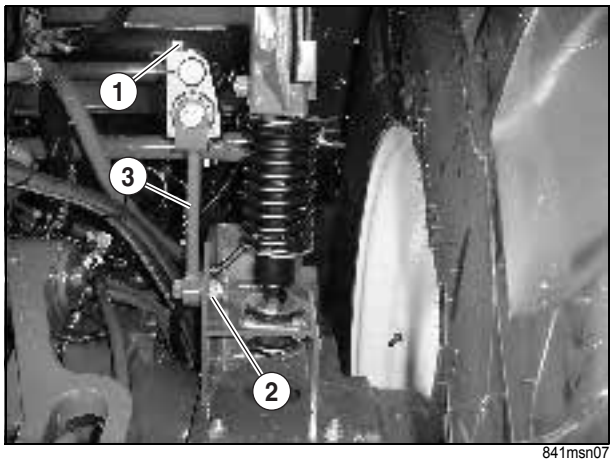
841hsn11

SUSPENSION ADJUSTMENT

ADJUSTMENT

- Put the tractor on flat and level ground.
- Undo screws (1) on both sides by several turns.
- Undo nuts (2) on both sides.
- Move the suspension arm (3) in parallel so that each of its ends line up with holes and slots (4), (5).
- Each position corresponds to a suspension setting:
  - Position A: Soft setting.
  - Position B: Intermediate setting.
  - Position C: Firm setting.

When the adjustment has been completed, retighten the screws (1) and nuts (2) to 15 daN.m.



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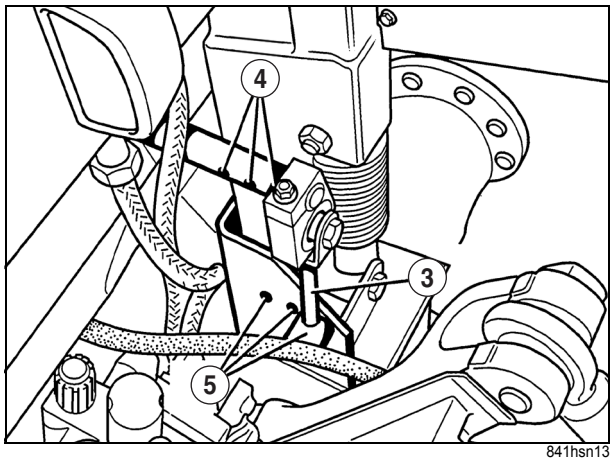

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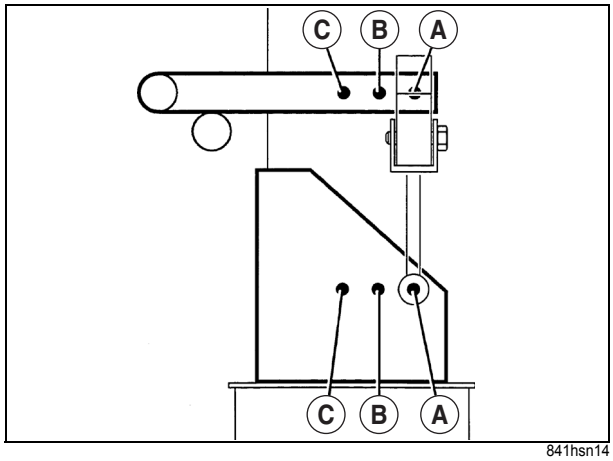


841hsn14

NATURAL VENTILATION

SIDE WINDOW

Opening left-hand side window, can be locked in the closed position and fixed open.

OPENING ROOF (D)

Can be released from inside the cab using handle. Held open by 2 struts.

The design of the opening roof means its direction of opening can be reversed. To do this, undo the ends of the 2 struts (2), remove the hinge pins (3) then turn the opening roof round. Refit parts (2) and (3).

To alter the aperture of the opening roof, set the trunnions (4) to the (A) or (B) positions to obtain the desired aperture.

REAR OPENING WINDOW

Can be released from inside the cab using handle (6).

The panel is held in the open position by 2 struts.

The panel has a rear-view mirror (5) to make visibility of the hitch attachment easier.

WINDSCREEN SUN BLIND

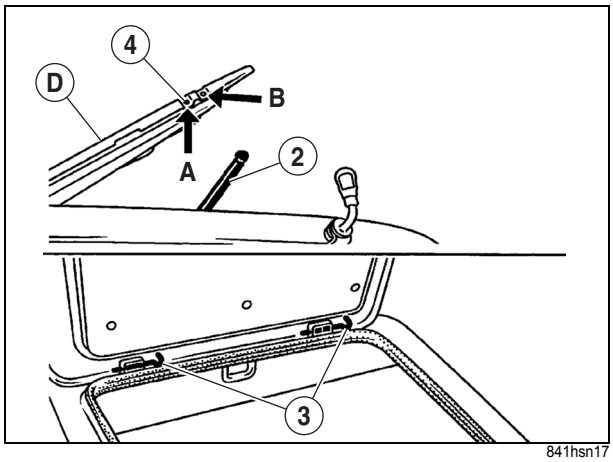
WINDSCREEN

Pull handle (8) to move the blind to the required height.

To roll the blind up, press lever (7).

When driving on the public road the doors must be closed and latched.

841hsn15



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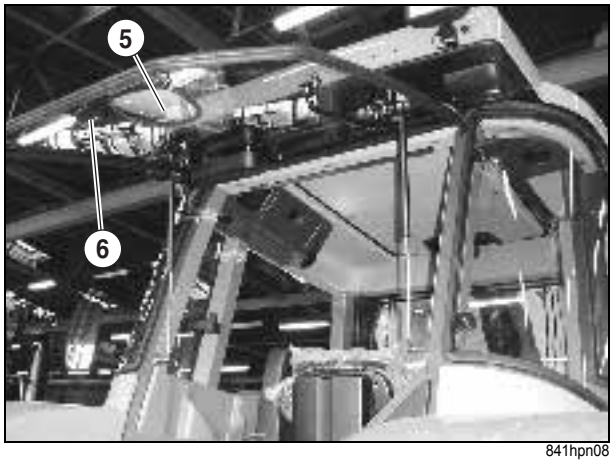

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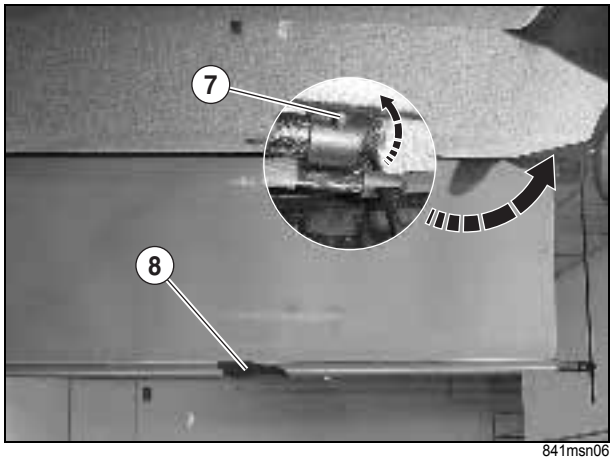


841msn06

HEATING - VENTILATION - AIR CONDITIONING

CONTROLS

1 - Fan speed adjustment knob.

2 - Heating temperature adjustment knob.

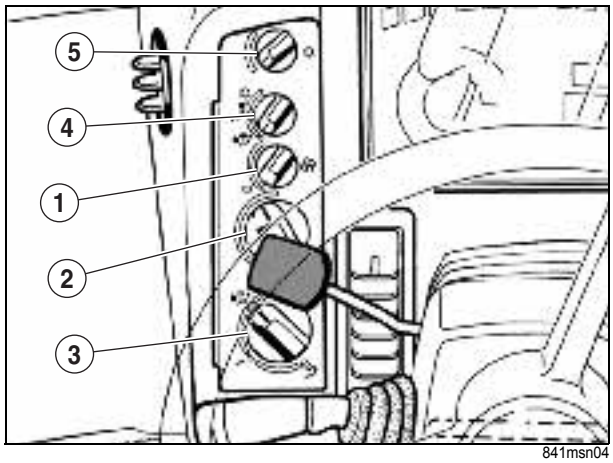
3 - Air distribution adjustment knob:

- Position Air directed to the windscreen.
- Position Air directed to the windscreen and feet.
- Position Air directed to the feet.
- Position Air directed to the driver.

4 - Heating, ventilation and air conditioning functions selector knob:

- Position Heating.
- Position Ventilation.
- Position Air conditioning.

5 - Cooling temperature adjusting knob.



841msn04

AIR VENTS

A - Heating and ventilation vents (can be swivelled and closed off).

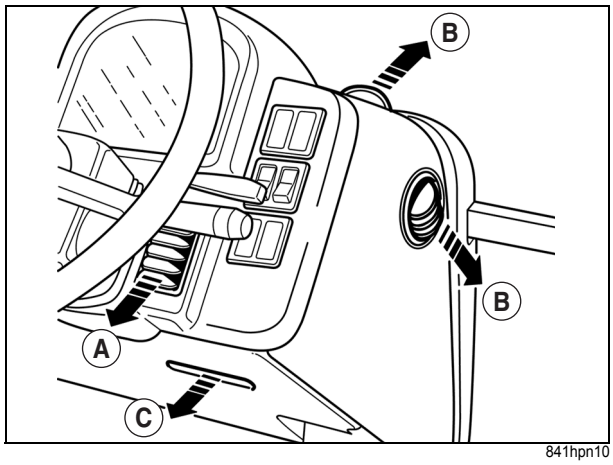
B - Windscreen demisting and defrosting vents (can be directed and closed off).

C - Foot heating vent (non adjustable).

D - Air conditioning and ventilation vents (can be swivelled and closed off).

E - Recirculating vents.

(A), (B) and (D) can be swivelled and closed off. (C) and (E) cannot be swivelled or closed off.



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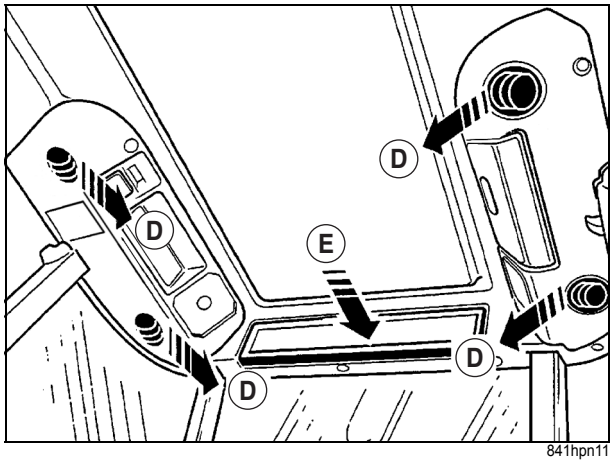


841hpn11

THE SYSTEM PROVIDES

Heating: Cold weather.

Ventilation: Blown and filtered air at external temperature.

Air conditioning: Summer.

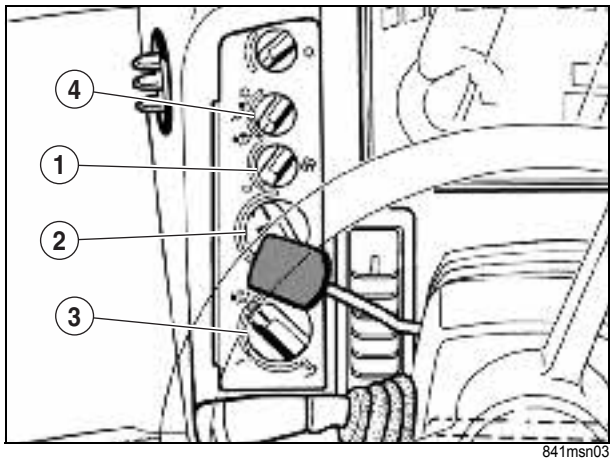
HEATING

Move knob (4) to "heating" position .

Knob (2) is used to adjust the heating temperature (Adjustment is progressive with the maximum as far round to the right-hand "red mark" as it will go).

Select the required fan speed with knob (1).

Vents (A), (B) and (C) blow heated and filtered air depending on the position of knob (3).



841msn03

VENTILATION

Move knob (4) to the "ventilation" position and knob (2) to the "blue" mark.

Select the required fan speed with knob (1).

The vents (D) blow filtered air at outside temperature.

AIR CONDITIONING

Move knob (4) to the "air conditioning" position and knob (2) to the "blue" mark.

Knob (5) is used to adjust the air conditioning temperature (Adjustment is progressive with the maximum as far round to the right as it will go).

Select the required fan speed with knob (1).

All vents (D) blow refrigerated air (filtered then cooled).

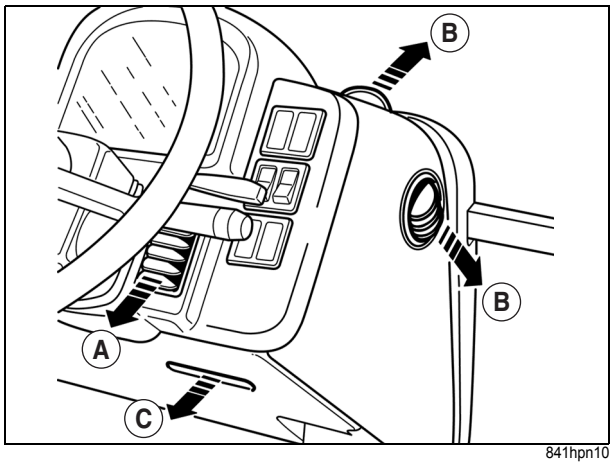
There is a refrigerated compartment to keep your drinks cold in the left-hand console of the cab roof.

Open the compartment (F) and put the drink inside. Turn the air conditioning and ventilation on.

Close off vent (E) so that the refrigerated air is properly directed over the drink.

Note: When using the air conditioning, ensure that the doors, side windows, rear hatch and opening roof are all shut.

Do not open the system; air conditioning fluid is hazardous to the eyes and skin.



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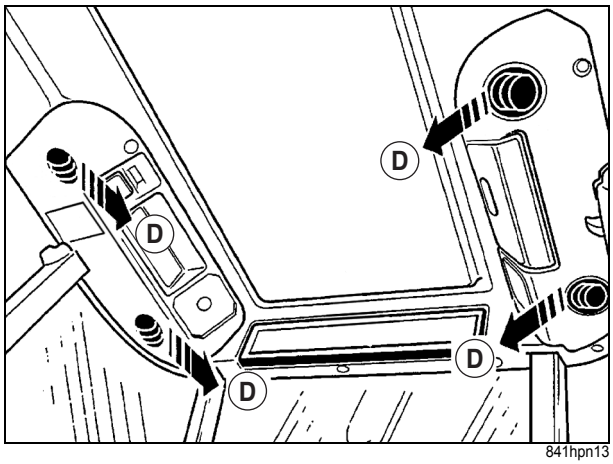

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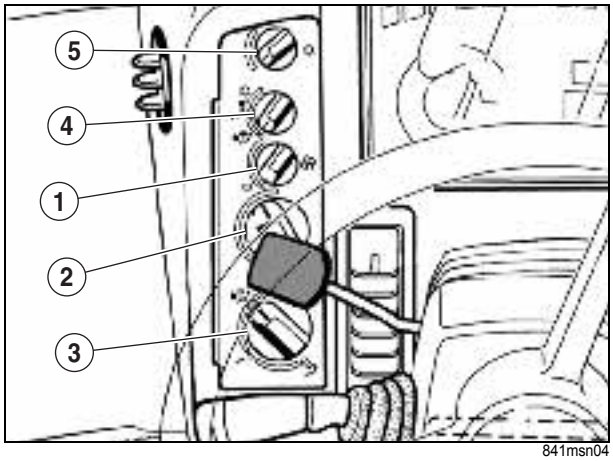

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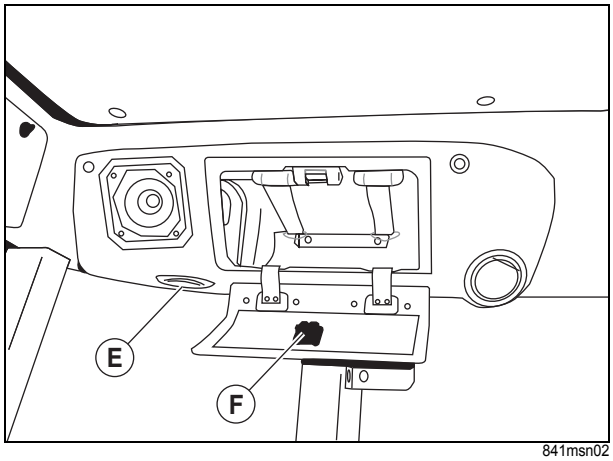


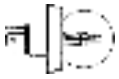
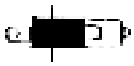
841msn02

Notes

C - ELECTRICAL SYSTEM

CHARACTERISTICS

BULBS

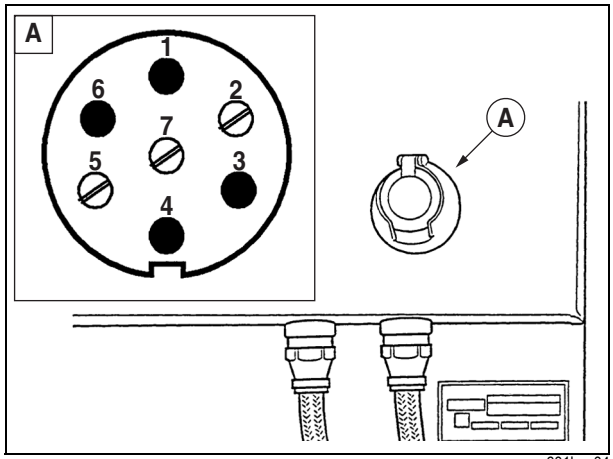
Designation	Power	Power
Dipped/ road lights	40/45 W	
Direction indicators	21 W	
Front sidelights	5 W	
Brake lights Rear lights	5/21 W	
Number plate light	10 W	
Working lights	55 W	 H3
Rotating beacon	55 W	 H1

TOWING SOCKET

IMPLEMENT/TRAILER LIGHT SOCKET (A)

1 - Left direction indicators.
2 - Available.
3 - Earth.
4 - Right direction indicators.
5 - RH lights and number plate light.
6 - Brake light.
7 - LH lights.

Note: When using the rear power socket, make sure that the lights on the implement are in good condition.



601hsn04

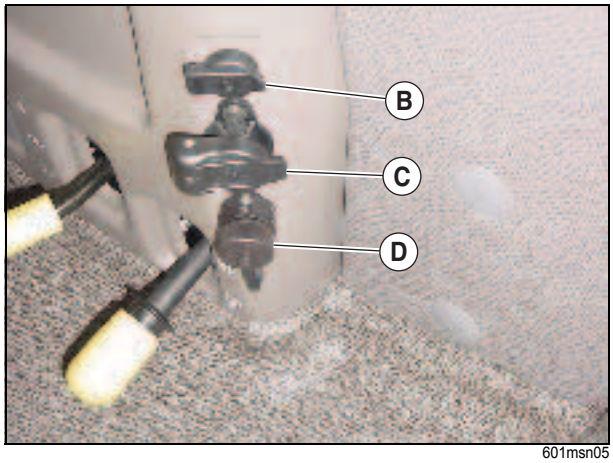
EVENT COUNTER CONNECTOR (B) FOR THE ON-BOARD COMPUTER

See instructions for use of the on-board computer in section I of this manual.

ELECTRICAL CONNECTION SOCKET (C)

12 V - 25 A maximum.

E.g.: For supplying electrical power to electronic boxes in sprayers, seed drills etc.



601msn05

7 PIN ISO SOCKET (D)

The ISO socket is used for communication of data from the tractor to the implement (E.g.: manure spreader, seed drill, sprayer etc.). Each terminal provides precise information:

1 - Actual speed.

2 - Theoretical speed.

3 - Power take-off speed.

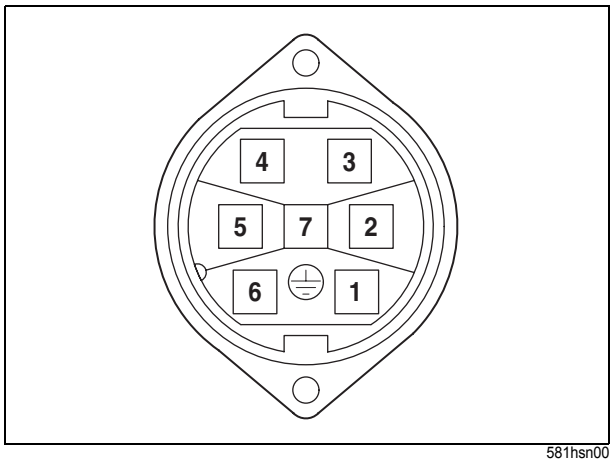
4 - TCE high position (lifting).

5 - -

6 - Positive after contact.

7 - Earth.

Note: To find out whether the socket on your implement is compatible with that on your tractor contact your CLAAS network.



581hsn00

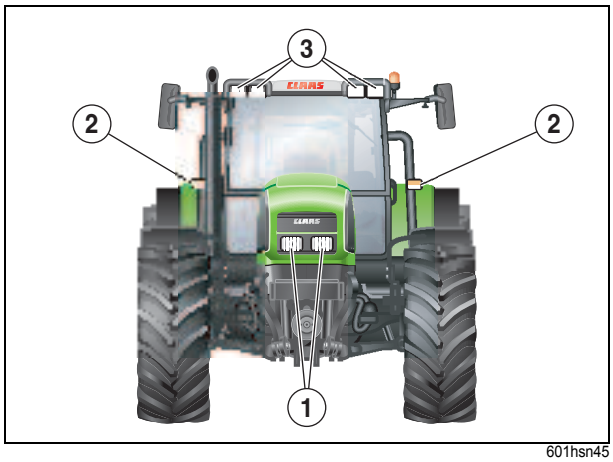
LIGHTING - SIGNALLING

AT THE FRONT

1 - Headlights (dipped/main beam).

2 - Direction indicators, hazard warning lights and side lights.

3 - Working lights.



601hsn45

AT THE REAR

4 - Side indicator repeaters:

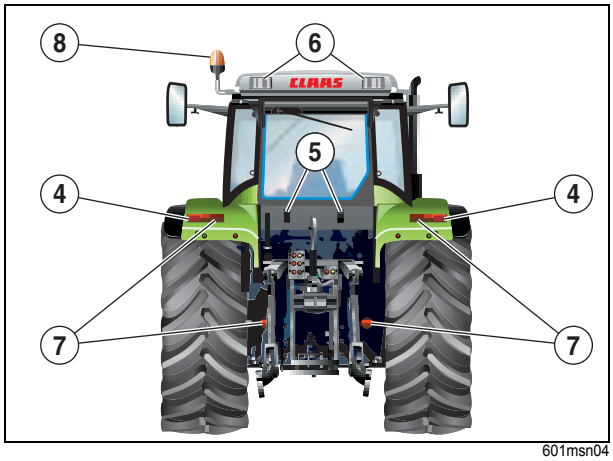
- Direction indicators and hazard warning lights.
- Brake lights.
- Side lights.

5 - Number plate lights.

6 - Working lights.

7 - Reflectors.

8 - Rotating beacon.



601msn04

CONTROLS

A - Control for headlights, direction indicators and horn.

B - Hazard warning lights.

C - Rotating light control button.

601hpn01

D - Switch for front working lights.

E - Switch for rear working lights.

4 Positions for switches (D) and (E):

- Stop ;
- Intermediate lighting (2 working lights on) ;
- Maximum lighting (4 working lights on) ;
- Spare.

Note: It is not possible to switch on the working lights if lever (A) is at position "0".

OPERATION OF LEVER (A)

• Direction indicators:

I Right side ;

II Left side ;

III To sound the horn, press the lever.

• To turn the lights on, turn the end of lever (A) anti-clockwise.

Position

= lights off

= side lights

= dipped beam/main beam headlights

To change from dipped to main beam, push the lever to (4). Bring the lever back to (5) to change back to dipped beam.

• To flash the headlights, pull the lever towards the steering wheel in (6).

IGNITION SWITCH WITH KEY (G)

P Parking.

0 Ignition off/engine stopped.

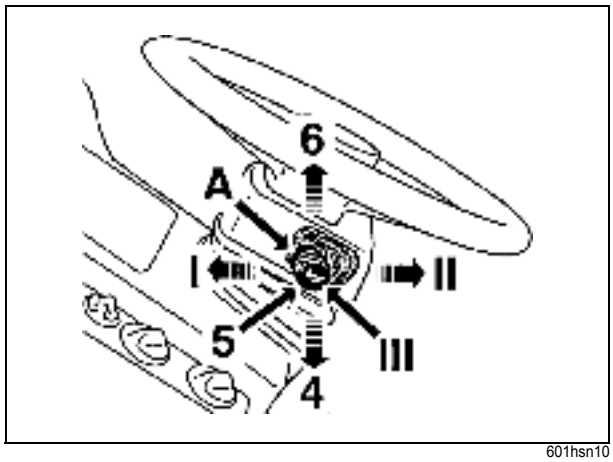
I Ignition on (autotest of lights on the console, automatic pre-heating).

II Not in use.

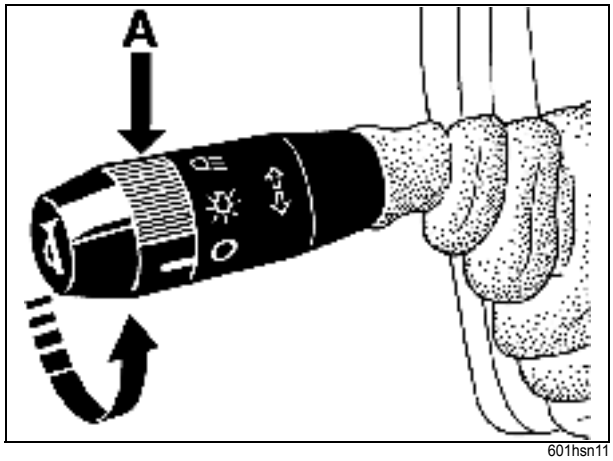
III Start.

Note: In parking position (P) the ignition is off and only the radio, digital clock and cigar lighter remain on.

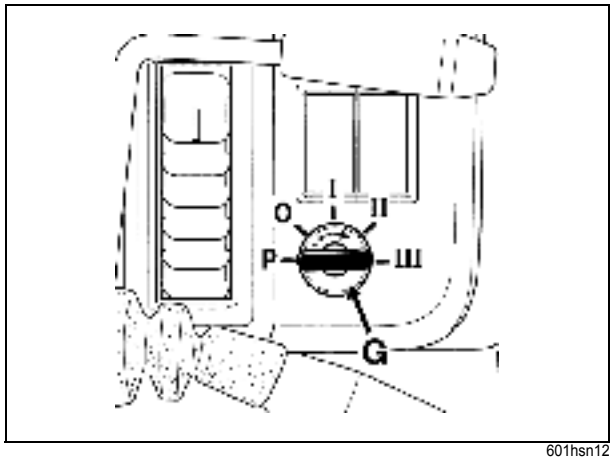
601hsn09



601hsn10



601hsn11



601hsn12

FUSES AND RELAYS

Important: If a fuse blows, replace it with a new one of the same rating. If it blows again, find the cause and remedy it. Do not use a fuse of a higher rating. Contact your approved CLAAS repairer.

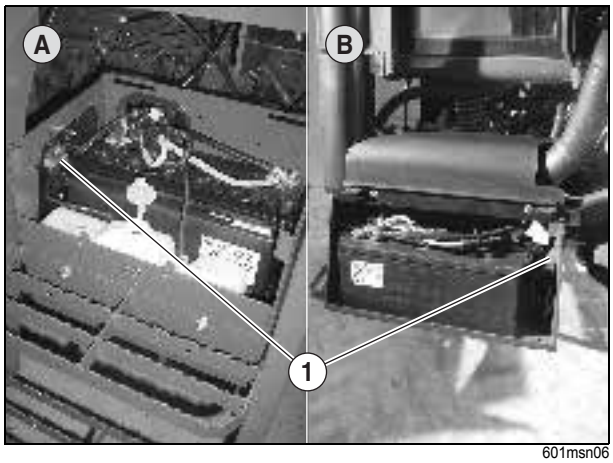
REMOVABLE FUSE

The reserve fuse is next to the battery in the compartment on the right front of the cab.

Ref	Designation	Current
1	Pre-heating	70 A

A - Battery housing range ARES 500.

B - Battery housing range ARES 600.



601msn06

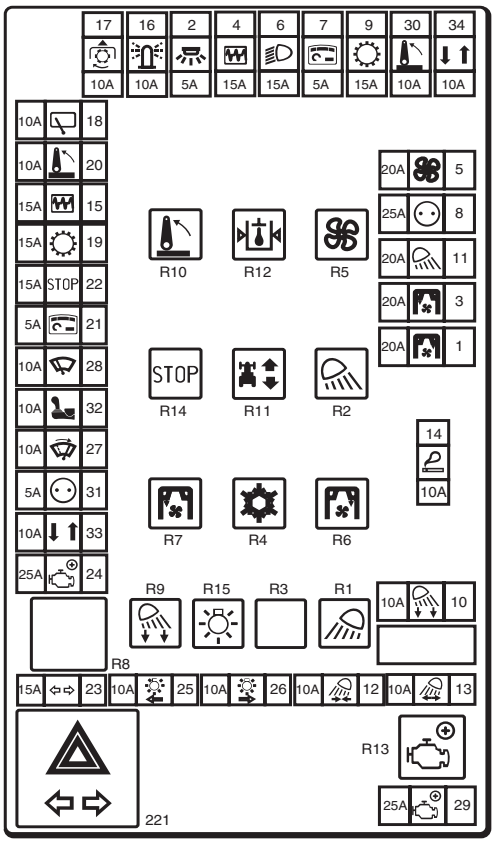
FUSE BOX

The fuse box is located on the left hand side of the dashboard. Open flap (2) of the dashboard to access the fuses and relays.

601msn07

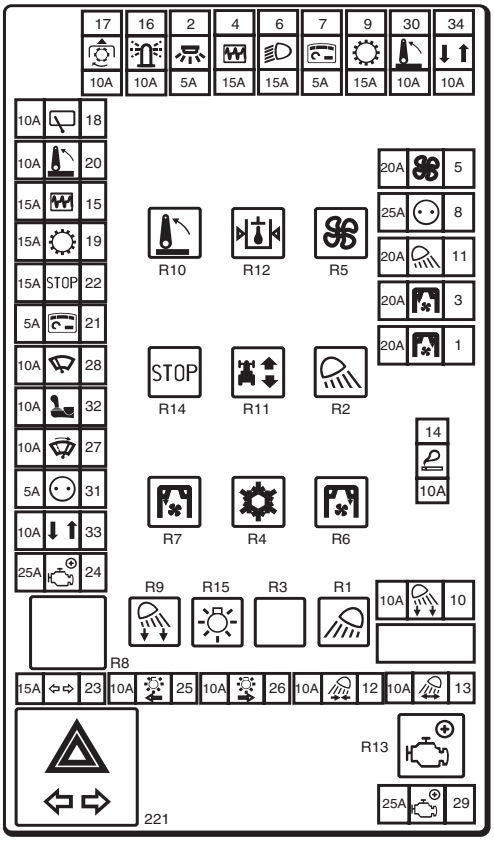
RELAY ALLOCATION:

R1 Front work lights.
R2 Rear work lights.
R3 Not in use.
R4 Air conditioning.
R5 Heating fan.
R6 Cooler fan (right side).
R7 Cooler fan (left side).
R8 Not in use.
R9 Rear work lights.
R10 Electronic lift.
R11 Reverser under torque.
R12 Hydraulic pressure.
R13 Start.
R14 Stop lights.



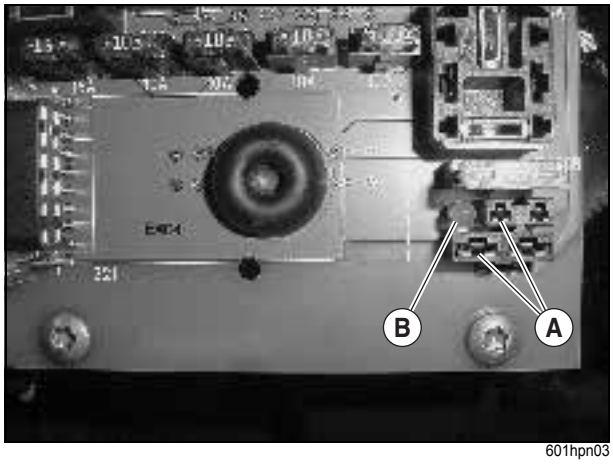
605msm36

Ref	Designation of fuses	Rating
1	Right-hand cooling fan	20 A
2	Roof light and clock	5 A
3	Left-hand cooling fan	20 A
4	Engine injection	15 A
5	Heating fan	20 A
6	Main and dipped headlights	15 A
7	Instrument panel	5 A
8	Electrical socket	25 A
9	"DRIVETRONIC" Central Processing Unit	15 A
10	Wing working lights	10 A
11	Rear work lights	20 A
12	Interior front working lights	10 A
13	Exterior front working lights	10 A
14	Cigar lighter, clock, radio	10 A
15	Engine injection	15 A
16	Rotating beacon	10 A
17	Front power take-off and pneumatic seat	10 A
18	Rear windscreen wiper	10 A
19	"DRIVETRONIC" Central Processing Unit	15 A
20	Electronic lift (and radar)	10 A
21	Instrument panel and diagnostics socket	5 A
22	Stop lights	15 A
23	Flashing indicators and hazard warning lights	15 A
24	Start-up circuit	25 A
25	Left-hand lights	10 A
26	Right-hand lights	10 A
27	Front windscreen wiper, self-parking	10 A
28	Front windscreen wiper and timer	10 A
29	Start-up fuse	25 A
30	Linkage	10 A
31	Socket	25 A
32	Electro pilot distributor	10 A
33	Suspended front axle	10 A
34	Suspended front axle	10 A

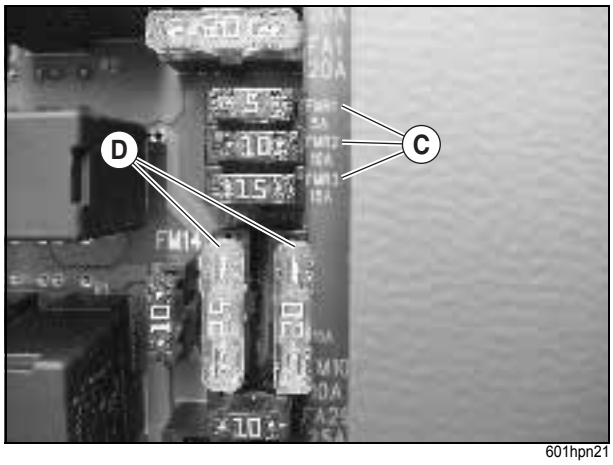


605msm36

605msm36



601hpn03



601hpn21

FUSE TESTER

The device tests 2 types of fuses.

- Position the fuse in (A).
- Switch on the ignition.
- The fuse is in good condition when light (B) comes on.

SPARE FUSES

The board has 5 spare fuses:

- FMR1, 5 A ; FMR2, 10 A ; FMR3, 15 A (C).
- FAR1, 25 A ; FAR2, 20 A (D).

D - ENGINE

CHARACTERISTICS

	ARES 546	ARES 556	ARES 566
Type	4045TRT73	4045HRT70	4045HRT71
Air intake	Turbo	Turbo + Intercooler	
Injection	Direct		
Cooling	Liquid		
Number of cylinders	4		
Cubic capacity (cm^3)	4525		
Idle speed (rpm)	850		
Maximum off-load rpm	2325		
Nominal power according to the standard ECE R24 (kW)	66,5	73,5	80,5
Maximum power according to the standard ECE R24 (kW)	70,5	76,6	84
Torque at maximum power according to the standard ECE R24 (daN.m)	33,6	34,8	40,1
Rev speed at maximum power	2000	2100	2000
Specific consumption at maximum power (g/kWh)*	234	221	220
Power at maximum torque according to standard ECE R24 (kW)	53,9	60,6	62,7
Maximum torque according to the standard ECE R24 (daN.m)	36,7	41,3	42,9
Rev speed at maximum torque	1400		
Specific consumption at maximum torque (g/kWh)*	233	224	225
Nominal PTO rpm	See chapter "E"		
Capacities	See chapter "K"		

	ARES 616	ARES 656	ARES 696
Type	6068TRT70	6068TRT71	6068TRT72
Air intake	Turbo		
Injection	Direct		
Cooling	Liquid		
Number of cylinders	6		
Cubic capacity (cm^3)	6788		
Idle speed (rpm)	850		
Maximum off-load rpm	2325		
Nominal power according to the standard ECE R24 (kW)	80,5	93	103
Maximum power according to the standard ECE R24 (kW)	84,6	97,2	107,1
Torque at maximum power according to the standard ECE R24 (daN.m)	40,4	46,4	51,1
Rev speed at maximum power	2000		
Specific consumption at maximum power (g/kWh)*	225	228	233
Power at maximum torque according to standard ECE R24 (kW)	71,8	77,3	91,9
Maximum torque according to the standard ECE R24 (daN.m)	45,7	52,7	58,5
Rev speed at maximum torque	1500	1400	1500
Specific consumption at maximum torque (g/kWh)*	226	225	229
Nominal PTO rpm	See chapter "E"		
Capacities	See chapter "K"		

** Values obtained at the power take-off.*

OPERATIONS BEFORE START

Carry out the operations included in the 10 hour check (see chapter "L"):

- Place the transmission in neutral (1).
- Check that the power take-off engagement control (2) is in the stop position.
- Check that the auxiliary spool valve control levers (3) and (4) are in neutral.

Switch on the ignition.

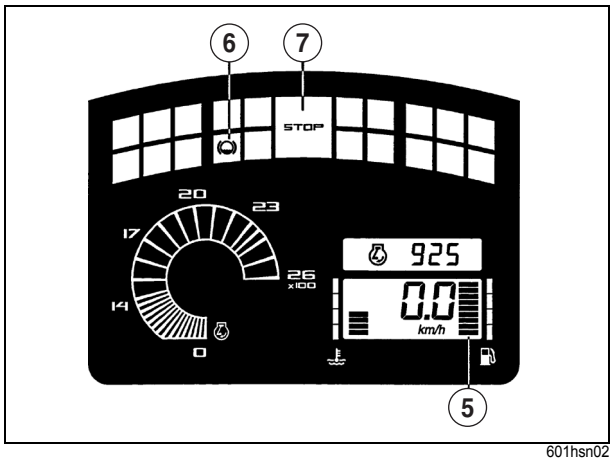
- Check the fuel level (5).
- Check the brake fluid warning light (6).

Note: If the warning lamp (6) stays on it means that the brake fluid level is too low. With the engine running, if the warning light (6) comes on it causes the "stop" (7) warning light and alarm to function..

Under these circumstances, do not use the tractor. There is a leak in the brake circuit. Get in touch urgently with your CLAAS approved repairer.

Before starting the tractor, make sure that you have carried out all the preliminary operations described above, and that there is no-one close by.

601hsn01



601hsn02

STARTING THE ENGINE

Make sure that there is nobody around the tractor. To start up, the reverser under torque has to be in neutral.

Place the reverser lever (G) in neutral.

Turn the key in switch (A) to position (I).

The ignition is turned on, all warning lights (B) come on for a self-test.

Note: If the lights do not come on, check the control panel protection fuse (see chapter "C"). If one of the lights does not come on, consult your CLAAS approved agent.

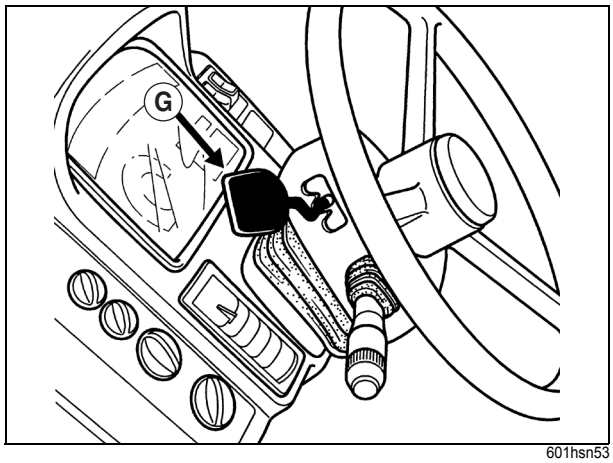
When the pre-heating light (C) goes out, turn the key to starting up position (III) then release it as soon as the engine fires.

The lights (B) go off, if not consult your CLAAS approved agent.

When cold, the use of the original engine starting choke may be insufficient. In this case, fit a heater on the fuel feed circuit or on the cooling circuit (see "Help in starting the engine in cold weather").

Note: It is advisable to warm up the engine for about ten minutes at 1200 rpm before using, particularly in winter. Do not use the maximum rev speed to speed up the warming process. During start, if the diesel temperature is between 15 °C and 40 °C, the idle speed is set to between 850 et 1050 rpm until the diesel reaches temperature (above 40 °C)

Always start the engine from the driver's cab. Never sart the engine by short-circuiting the starter motor terminals. Do not leave the engine running for long periods in an enclosed area: the exhaust gases can cause asphyxiation.



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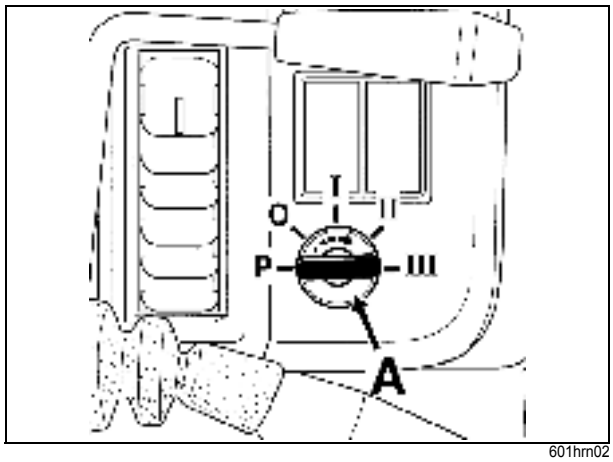

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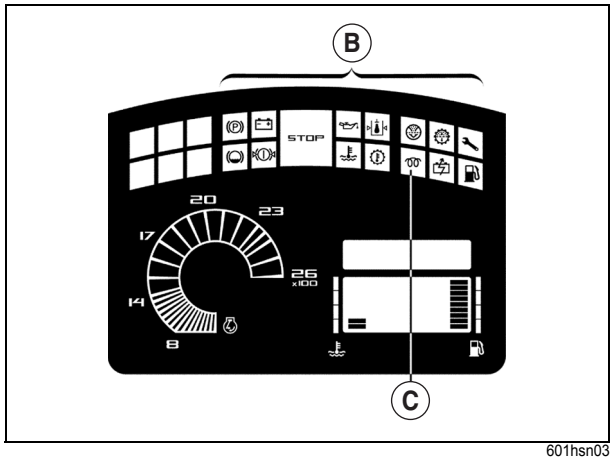


601hsn03

ENGINE STARTING HELP WHEN COLD

FUEL HEATER

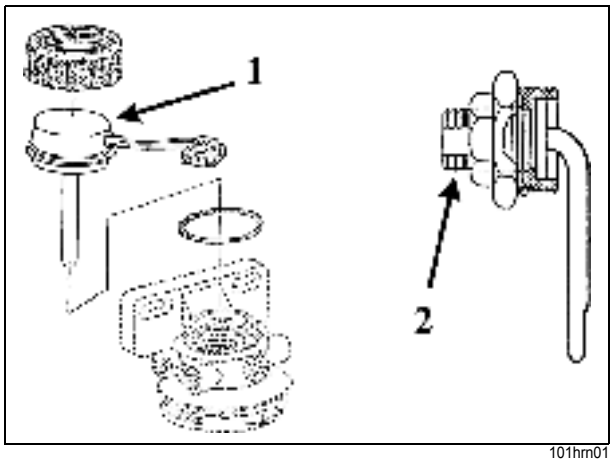
A fuel heater (1) may be installed on the fuel filter head. This heater is automatically switched on and off depending on the environmental temperature. For more information, contact your approved CLAAS repair facility.

COOLING FLUID HEATER

For countries where the temperature is near to or lower than 0 °C, a cooling fluid heater can be used (2) in addition to the pre-heating device for starting-up already installed.

The cooling fluid heater is screwed in place of plug (3). Power for the heater is provided by connecting plug (4) to a 220 V power source.

Note: The heating time depends on the ambient temperature (e.g.: at - 15 °C heating for about 2 hours). If the temperature is below - 15 °C, increase the heating time.



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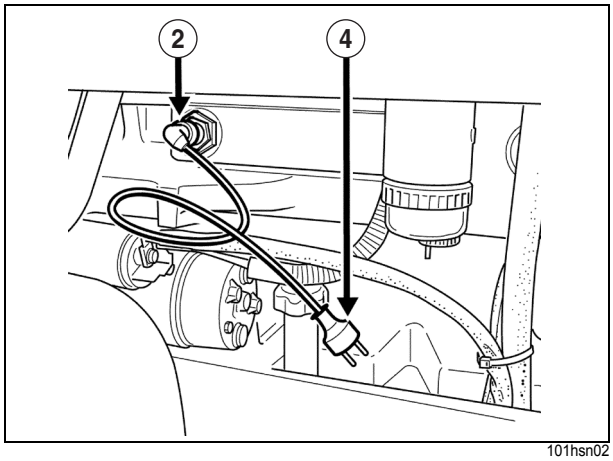
STOPPING THE ENGINE

Immobilize the tractor and place the gear lever and on-load reverser lever in neutral, then apply the hand brake.

Allow the engine to run at idle speed for 1 or 2 minutes then switch off the ignition switch (A).

Note: When the engine is stopped, some of the dashboard and transmission display warning lights remain alight for several seconds before going out.

Before stopping the engine, lower the implements to the ground and apply the hand brake. Do not leave the engine running for long periods in an enclosed area: the exhaust gases can cause asphyxiation.



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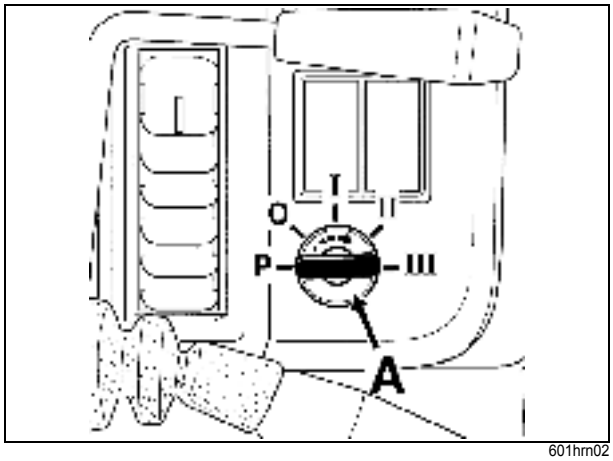


601hrn02

OPERATION

GENERAL

The engine of your tractor has been specifically designed for agricultural use. It meets the Tier II standard. Follow a few simple rules and you will get optimum performance from your engine.

RUNNING-IN

The first 100 hours of operation are important since, to a large extent, they determine the future life of the engine.

Recommendations:

1 - Avoid working in under load or long periods at idling speed in the first 100 hours.

2 - Avoid working in over load using too high a gearbox ratio and an engine speed of around 1600 to 1800 rpm. (accelerator at maximum). This causes mechanical and thermal stress which is harmful during the running-in period.

3 - Take particular care with the fluid levels (oil and cooling liquid) and always watch the engine temperature.

OPERATING TEMPERATURE

The engine is designed to operate at maximum torque. However, do not demand maximum power from the engine until it has reached its operating temperature. To do this, always allow it to run at half-speed for 10 minutes before using it.

If during operation the indicated temperature enters the red zone, stop working. Carry out the checks indicated in chapter "L".

OPERATING RPM

Idle rpm is not an ideal speed for engine operation. You should therefore stop the engine when the tractor is not being used.

The maximum off load rpm is reached when the accelerator pedal is at its maximum position, transmission in neutral. Running the engine at this speed when the tractor is stationary is not recommended, especially when the engine is cold.

OPERATING AT INTERMEDIATE POWER

If when working at full throttle, you notice that engine speed is constantly above maximum power rpm and not varying much, this means that the engine is "underloaded". In this case, you can work in more economical conditions by engaging a higher gear ratio and reducing the engine speed (accelerator in median position) or by activating the Quadrishift II or Quadractiv functions.

If you are working with the power take-off, it is also possible, if the load is partial,to use the power take-off in economical mode (540 rpm economical): In this case match the engine speed to the normalized speed of the economical power take-off.

FULL POWER OPERATION

Having chosen the correct gear ratio (according to the implement and the work to be carried out), place the accelerator lever in maximum position. Under these conditions engine speed should be close to maximum power speed.

If power demand reduces for a short time, engine rpm rises to between maximum power speed and the maximum off load speed.

If power demand increases for a short time, the engine can easily cope with the overload up to its maximum torque limit. If the engine is too often at a rev speed close to maximum torque, reduce the gear ratio so that the engine returns to a speed close to the maximum power or activate the Quadrishift II or Quadractiv functions. The increase in engine speed compensates for the reduction in the mechanical ratio, and the working speed is increased.

SPECIFIC CONSUMPTION

This is the fuel consumed when developing 1 kW for 1 hour. The consumption is expressed in grams (a litre of diesel fuel weighs about 850 grams).

So as not to exceed the maximum on road speed of 40 km/h, choose an appropriate speed ratio.

FUEL

GENERAL

The presence of impurities, even if only a few microns in size, is enough to cause very serious damage to the injection system.

Important: Supply the injection system with diesel that is free from all impurities and any trace of water.

QUALITY REQUIREMENT

High fuel quality is vital for both engine performance and durability. Only use diesel fuel that satisfies the quality requirement of the EN 590 standard. Consult your fuel supplier to confirm that the diesel fuel meets this standard. Diesel biofuels can only be used if they comply with the DIN 51606 standard. The biofuel must only be used mixed with diesel, at 5 % maximum.

Important: Untreated vegetable oils must not be used in any concentration whatsoever.

Apart from the notion of "quality" standard, the fuel must correspond to standard ISO 12156.2 in terms of lubricating power.

Important: Any blend of diesel with fuels other than biofuel is prohibited. When operating at negative temperatures, use a diesel of the "very cold weather" type available from your supplier.

FILLING THE TANK

It is best to fill the tank in the evening to avoid water condensation in the tank.

1 - Clean the area around the diesel filler cap.

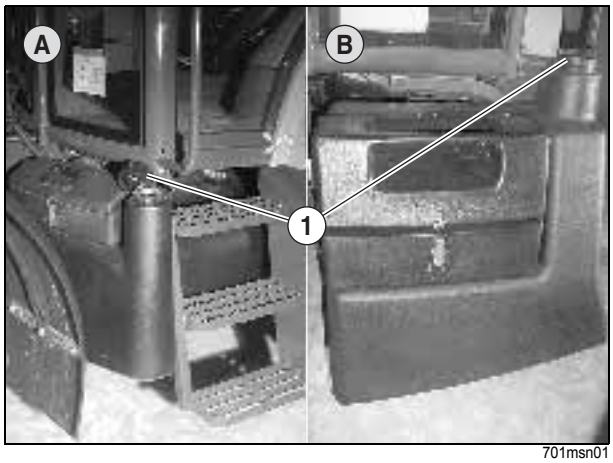
2 - Remove the filler cap (1) and put it in a clean dry place.

3 - After refuelling, replace and tighten the filler cap.

A - Fuel tank range ARES 500.

B - Fuel tank range ARES 600.

Note: It is recommended to filter the fuel when filling the tank.



701msn01

HANDLING THE FUEL

Important: When transporting fuel, use containers intended for this purpose. Your container must only be used for this purpose. The mixture, even in minute quantities, of chemicals (treatment product, other fuel, etc.) with your fuel will damage the engine injection system.

Important: The fuel tank cap includes a vent system. Make sure that the aperture is not blocked. If it malfunctions, the engine is incorrectly fuelled, which can lead to a breakdown and distortion of the fuel tank.

BLEEDING AIR FROM THE INJECTION SYSTEM

Bleed the injection system to evacuate air contained in the pipes after changing the fuel filter or after draining the tank.

To bleed the system:

1st case: After changing the fuel filter

1 - Drain range ARES 500.

2 - Drain range ARES 600.

- Loosen bleed screw (A) located on the head of the final filter.
- Activate the feed pump priming lever (B) until all the air is eliminated.
- Retighten bleed screw (A).

2nd case: After complete draining of the circuit

- Loosen fuel return pipe (C) at the injector pump.
- Operate the fuel feed pump priming lever.
- As soon as the fuel flowing out no longer contains any bubbles, tighten the fuel return pipe at a torque of 2,7 daN.m. The priming lever is spring-loaded to the normal position when released.
- Place the accelerator lever in the mid acceleration position.

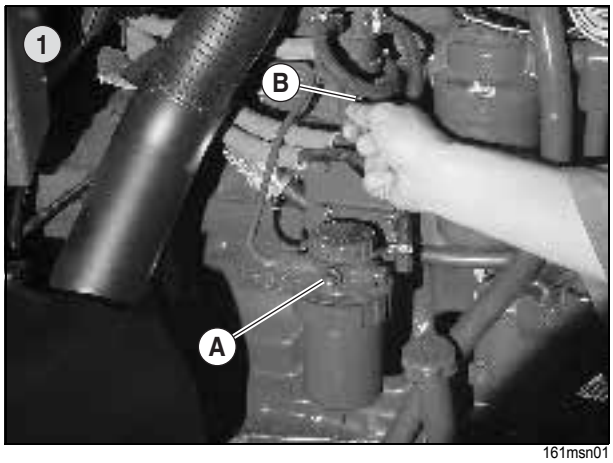
Important: Always use the correct spanner to loosen or tighten the fuel pipes at the injectors and/or injection pump to avoid damage.

1 - Using 2 spanners, loosen the fuel pipe connections (D) at the injectors.

2 - Turn the ignition switch on for 15 seconds until fuel flows without air bubbles from the loosened connector. Tighten up the connection to a torque of 2,7 daN.m.

3 - Repeat this procedure on the other injectors (if necessary) until the fuel system is completely free of air.

Note: If there is no resistance in the fuel pump primer lever, turn the engine using the starter until the pump operating cam is correctly located on the camshaft. Never turn the engine without ensuring that there is adequate fuel supply. If the engine still does not start, consult your approved CLAAS repairer.



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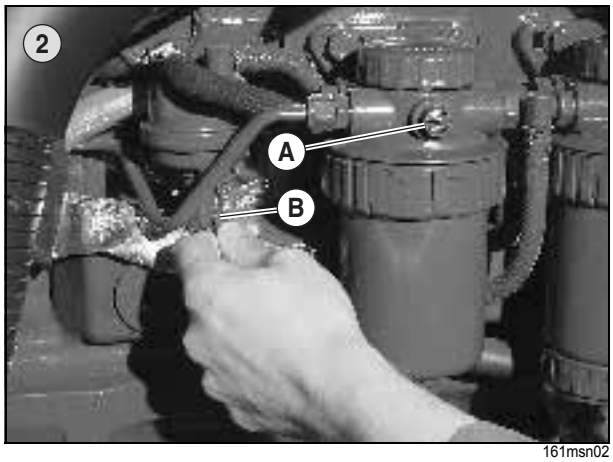

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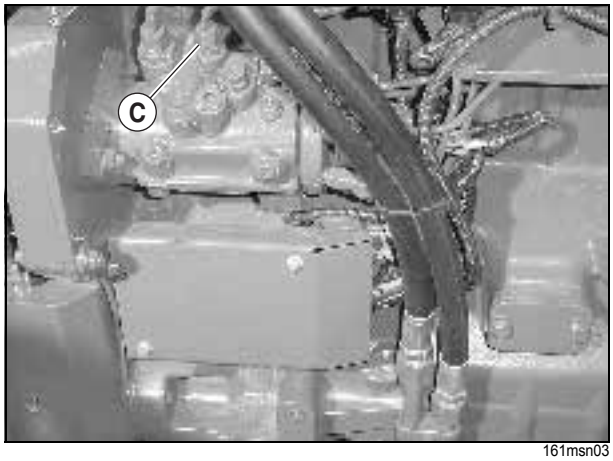
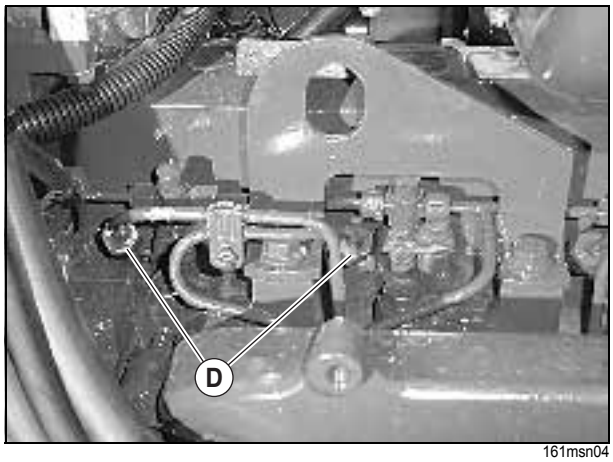


161msn03



161msn04

E - TRANSMISSION

TABLES OF FORWARD SPEEDS (QUADRISHIFT TRANSMISSION)

RANGE	SPEED	SPEED	ARES 546 - 556 - 566 - 616 Road speeds in km/h and *m.p.h.* at 2200 rpm with rear tyres:									
			18.4 R 38 600/65 R 38 520/70 R 38		16.9 R 34 480/70 R 34 540/65 R 34		18.4 R 34 520/70 R 34		13.6 R 38		16.9 R 38 480/70 R 38 540/65 R 38	
Crawler	I	1	0,58	*0,36*	0,53	*0,33*	0,55	*0,34*	0,53	*0,33*	0,57	*0,35*
		2	0,68	*0,42*	0,62	*0,39*	0,64	*0,40*	0,62	*0,39*	0,66	*0,41*
		3	0,81	*0,50*	0,73	*0,45*	0,76	*0,47*	0,73	*0,45*	0,78	*0,48*
		4	0,94	*0,58*	0,86	*0,53*	0,89	*0,55*	0,85	*0,53*	0,91	*0,57*
	II	1	0,88	*0,55*	0,80	*0,50*	0,83	*0,52*	0,80	*0,50*	0,85	*0,53*
		2	1,03	*0,64*	0,94	*0,58*	0,97	*0,60*	0,93	*0,58*	1,00	*0,62*
		3	1,22	*0,76*	1,11	*0,69*	1,14	*0,71*	1,10	*0,68*	1,18	*0,73*
		4	1,43	*0,89*	1,29	*0,80*	1,34	*0,83*	1,29	*0,80*	1,38	*0,86*
	III	1	1,30	*0,81*	1,19	*0,74*	1,23	*0,76*	1,18	*0,73*	1,27	*0,79*
		2	1,53	*0,95*	1,39	*0,86*	1,43	*0,89*	1,38	*0,86*	1,48	*0,92*
		3	1,80	*1,12*	1,64	*1,02*	1,69	*1,05*	1,63	*1,01*	1,75	*1,09*
		4	2,11	*1,31*	1,92	*1,19*	1,98	*1,23*	1,90	*1,18*	2,05	*1,27*
	IV	1	2,02	*1,25*	1,84	*1,14*	1,90	*1,18*	1,83	*1,14*	1,96	*1,22*
		2	2,37	*1,47*	2,15	*1,34*	2,22	*1,38*	2,14	*1,33*	2,30	*1,43*
		3	2,80	*1,74*	2,54	*1,58*	2,63	*1,63*	2,52	*1,56*	2,71	*1,68*
		4	3,27	*2,03*	2,97	*1,84*	3,07	*1,91*	2,95	*1,83*	3,17	*1,97*
Field	I	1	2,17	*1,35*	1,97	*1,22*	2,03	*1,26*	1,96	*1,22*	2,10	*1,30*
		2	2,54	*1,58*	2,30	*1,43*	2,38	*1,48*	2,29	*1,42*	2,46	*1,53*
		3	2,99	*1,86*	2,72	*1,69*	2,81	*1,75*	2,70	*1,68*	2,90	*1,80*
		4	3,50	*2,17*	3,18	*1,97*	3,29	*2,04*	3,16	*1,96*	3,40	*2,11*
	II	1	3,27	*2,03*	2,97	*1,84*	3,07	*1,91*	2,95	*1,83*	3,17	*1,97*
		2	3,83	*2,38*	3,48	*2,16*	3,60	*2,24*	3,46	*2,15*	3,71	*2,30*
		3	4,52	*2,81*	4,11	*2,55*	4,25	*2,64*	4,08	*2,53*	4,38	*2,72*
		4	5,29	*3,29*	4,81	*2,99*	4,97	*3,09*	4,78	*2,97*	5,13	*3,19*
	III	1	4,85	*3,01*	4,40	*2,73*	4,55	*2,83*	4,37	*2,71*	4,70	*2,92*
		2	5,67	*3,52*	5,15	*3,20*	5,33	*3,31*	5,12	*3,18*	5,50	*3,42*
		3	6,70	*4,16*	6,08	*3,78*	6,29	*3,91*	6,04	*3,75*	6,49	*4,03*
		4	7,84	*4,87*	7,12	*4,42*	7,36	*4,57*	7,07	*4,39*	7,60	*4,72*
	IV	1	7,52	*4,67*	6,83	*4,24*	7,06	*4,38*	6,78	*4,21*	7,29	*4,53*
		2	8,80	*5,46*	7,99	*4,96*	8,26	*5,13*	7,94	*4,93*	8,53	*5,30*
		3	10,39	*6,45*	9,44	*5,86*	9,75	*6,05*	9,37	*5,82*	10,07	*6,25*
		4	12,16	*7,55*	11,05	*6,86*	11,42	*7,09*	10,97	*6,81*	11,79	*7,32*
Road	I	1	8,12	*5,04*	7,38	*4,58*	7,63	*4,74*	7,33	*4,55*	7,88	*4,89*
		2	9,51	*5,91*	8,64	*5,37*	8,93	*5,55*	8,58	*5,33*	9,22	*5,73*
		3	11,22	*6,97*	10,20	*6,33*	10,54	*6,55*	10,13	*6,29*	10,88	*6,76*
		4	13,13	*8,15*	11,93	*7,41*	12,33	*7,66*	11,85	*7,36*	12,73	*7,91*
	II	1	12,27	*7,62*	11,15	*6,92*	11,52	*7,15*	11,07	*6,87*	11,90	*7,39*
		2	14,36	*8,92*	13,05	*8,10*	13,48	*8,37*	12,96	*8,05*	13,92	*8,64*
		3	16,95	*10,53*	15,40	*9,56*	15,92	*9,89*	15,30	*9,50*	16,43	*10,20*
		4	19,84	*12,32*	18,03	*11,20*	18,63	*11,57*	17,90	*11,12*	19,24	*11,95*
	III	1	18,17	*11,28*	16,50	*10,25*	17,06	*10,59*	16,39	*10,18*	17,61	*10,94*
		2	21,26	*13,20*	19,32	*12,00*	19,96	*12,40*	19,19	*11,92*	20,61	*12,80*
		3	25,10	*15,59*	22,80	*14,16*	23,57	*14,64*	22,65	*14,07*	24,33	*15,11*
		4	29,37	*18,24*	26,69	*16,57*	27,58	*17,13*	26,51	*16,46*	28,48	*17,69*
	IV	1	28,18	*17,50*	25,60	*15,90*	26,46	*16,43*	25,43	*15,79*	27,32	*16,97*
		2	32,98	*20,48*	29,96	*18,61*	30,97	*19,23*	29,76	*18,48*	31,98	*19,86*
		3	38,93	*24,18*	35,37	*21,96*	36,56	*22,70*	35,13	*21,82*	37,75	*23,44*
		4	41,94 (1)	*26,04*	38,10 (1)	*23,66*	39,38 (1)	*24,45*	37,85 (1)	*23,50*	40,66 (1)	*25,25*

(1) At 2025 rpm

TABLES OF FORWARD SPEEDS (QUADRISHIFT TRANSMISSION)

RANGE	SPEED	SPEED	ARES 656 Road speeds in km/h and *m.p.h.* at 2200 rpm with rear tyres:											
			18.4 R 38 600/65 R 38 520/70 R 38		16.9 R 34 480/70 R 34 540/65 R 34		18.4 R 34 520/70 R 34		13.6 R 38		16.9 R 38 480/70 R 38 540/65 R 38		20.8 R 38 650/65 R 38 580/70 R 38	
Crawler	I	1	0,58	*0,36*	0,53	*0,33*	0,55	*0,34*	0,53	*0,33*	0,57	*0,35*	0,58	*0,36*
		2	0,68	*0,42*	0,62	*0,39*	0,64	*0,40*	0,62	*0,39*	0,66	*0,41*	0,68	*0,42*
		3	0,81	*0,50*	0,73	*0,45*	0,76	*0,47*	0,73	*0,45*	0,78	*0,48*	0,81	*0,50*
		4	0,94	*0,58*	0,86	*0,53*	0,89	*0,55*	0,85	*0,53*	0,91	*0,57*	0,94	*0,58*
	II	1	0,88	*0,55*	0,80	*0,50*	0,83	*0,52*	0,80	*0,50*	0,85	*0,53*	0,88	*0,55*
		2	1,03	*0,64*	0,94	*0,58*	0,97	*0,60*	0,93	*0,58*	1,00	*0,62*	1,03	*0,64*
		3	1,22	*0,76*	1,11	*0,69*	1,14	*0,71*	1,10	*0,68*	1,18	*0,73*	1,22	*0,76*
		4	1,43	*0,89*	1,29	*0,80*	1,34	*0,83*	1,29	*0,80*	1,38	*0,86*	1,43	*0,89*
	III	1	1,30	*0,81*	1,19	*0,74*	1,23	*0,76*	1,18	*0,73*	1,27	*0,79*	1,30	*0,81*
		2	1,53	*0,95*	1,39	*0,86*	1,43	*0,89*	1,38	*0,86*	1,48	*0,92*	1,53	*0,95*
		3	1,80	*1,12*	1,64	*1,02*	1,69	*1,05*	1,63	*1,01*	1,75	*1,09*	1,80	*1,12*
		4	2,11	*1,31*	1,92	*1,19*	1,98	*1,23*	1,90	*1,18*	2,05	*1,27*	2,11	*1,31*
	IV	1	2,02	*1,25*	1,84	*1,14*	1,90	*1,18*	1,83	*1,14*	1,96	*1,22*	2,02	*1,25*
		2	2,37	*1,47*	2,15	*1,34*	2,22	*1,38*	2,14	*1,33*	2,30	*1,43*	2,37	*1,47*
		3	2,80	*1,74*	2,54	*1,58*	2,63	*1,63*	2,52	*1,56*	2,71	*1,68*	2,80	*1,74*
		4	3,27	*2,03*	2,97	*1,84*	3,07	*1,91*	2,95	*1,83*	3,17	*1,97*	3,27	*2,03*
Field	I	1	2,17	*1,35*	1,97	*1,22*	2,03	*1,26*	1,96	*1,22*	2,10	*1,30*	2,26	*1,40*
		2	2,54	*1,58*	2,30	*1,43*	2,38	*1,48*	2,29	*1,42*	2,46	*1,53*	2,64	*1,64*
		3	2,99	*1,86*	2,72	*1,69*	2,81	*1,75*	2,70	*1,68*	2,90	*1,80*	3,12	*1,94*
		4	3,50	*2,17*	3,18	*1,97*	3,29	*2,04*	3,16	*1,96*	3,40	*2,11*	3,65	*2,27*
	II	1	3,27	*2,03*	2,97	*1,84*	3,07	*1,91*	2,95	*1,83*	3,17	*1,97*	3,41	*2,12*
		2	3,83	*2,38*	3,48	*2,16*	3,60	*2,24*	3,46	*2,15*	3,71	*2,30*	3,99	*2,48*
		3	4,52	*2,81*	4,11	*2,55*	4,25	*2,64*	4,08	*2,53*	4,38	*2,72*	4,72	*2,93*
		4	5,29	*3,29*	4,81	*2,99*	4,97	*3,09*	4,78	*2,97*	5,13	*3,19*	5,52	*3,43*
	III	1	4,85	*3,01*	4,40	*2,73*	4,55	*2,83*	4,37	*2,71*	4,70	*2,92*	5,05	*3,14*
		2	5,67	*3,52*	5,15	*3,20*	5,33	*3,31*	5,12	*3,18*	5,50	*3,42*	5,91	*3,67*
		3	6,70	*4,16*	6,08	*3,78*	6,29	*3,91*	6,04	*3,75*	6,49	*4,03*	6,98	*4,33*
		4	7,84	*4,87*	7,12	*4,42*	7,36	*4,57*	7,07	*4,39*	7,60	*4,72*	8,17	*5,07*
	IV	1	7,52	*4,67*	6,83	*4,24*	7,06	*4,38*	6,78	*4,21*	7,29	*4,53*	7,84	*4,87*
		2	8,80	*5,46*	7,99	*4,96*	8,26	*5,13*	7,94	*4,93*	8,53	*5,30*	9,18	*5,70*
		3	10,39	*6,45*	9,44	*5,86*	9,75	*6,05*	9,37	*5,82*	10,07	*6,25*	10,83	*6,73*
		4	12,16	*7,55*	11,05	*6,86*	11,42	*7,09*	10,97	*6,81*	11,79	*7,32*	12,68	*7,87*
Road	I	1	8,12	*5,04*	7,38	*4,58*	7,63	*4,74*	7,33	*4,55*	7,88	*4,89*	8,47	*5,26*
		2	9,51	*5,91*	8,64	*5,37*	8,93	*5,55*	8,58	*5,33*	9,22	*5,73*	9,91	*6,15*
		3	11,22	*6,97*	10,20	*6,33*	10,54	*6,55*	10,13	*6,29*	10,88	*6,76*	11,70	*7,27*
		4	13,13	*8,15*	11,93	*7,41*	12,33	*7,66*	11,85	*7,36*	12,73	*7,91*	13,70	*8,51*
	II	1	12,27	*7,62*	11,15	*6,92*	11,52	*7,15*	11,07	*6,87*	11,90	*7,39*	12,79	*7,94*
		2	14,36	*8,92*	13,05	*8,10*	13,48	*8,37*	12,96	*8,05*	13,92	*8,64*	14,97	*9,30*
		3	16,95	*10,53*	15,40	*9,56*	15,92	*9,89*	15,30	*9,50*	16,43	*10,20*	17,67	*10,97*
		4	19,84	*12,32*	18,03	*11,20*	18,63	*11,57*	17,90	*11,12*	19,24	*11,95*	20,69	*12,85*
	III	1	18,17	*11,28*	16,50	*10,25*	17,06	*10,59*	16,39	*10,18*	17,61	*10,94*	18,94	*11,76*
		2	21,26	*13,20*	19,32	*12,00*	19,96	*12,40*	19,19	*11,92*	20,61	*12,80*	22,17	*13,77*
		3	25,10	*15,59*	22,80	*14,16*	23,57	*14,64*	22,65	*14,07*	24,33	*15,11*	26,17	*16,25*
		4	29,37	*18,24*	26,69	*16,57*	27,58	*17,13*	26,51	*16,46*	28,48	*17,69*	30,63	*19,02*
	IV	1	28,18	*17,50*	25,60	*15,90*	26,46	*16,43*	25,43	*15,79*	27,32	*16,97*	29,38	*18,24*
		2	32,98	*20,48*	29,96	*18,61*	30,97	*19,23*	29,76	*18,48*	31,98	*19,86*	34,39	*21,36*
		3	38,93	*24,18*	35,37	*21,96*	36,56	*22,70*	35,13	*21,82*	37,75	*23,44*	40,59	*25,21*
		4	40,29 (1)	*25,02*	36,60 (1)	*22,73*	37,83 (1)	*23,49*	36,35 (1)	*22,57*	39,06 (1)	*24,26*	42,00 (1)	*26,08*

(1) At 1945 rpm

TABLES OF FORWARD SPEEDS (QUADRISHIFT TRANSMISSION)

RANGE	SPEED	SPEED	ARES 696 Road speeds in km/h and *m.p.h.* at 2200 rpm with rear tyres:			
			20.8 R 38 650/65 R 38 580/70 R 38 520/85 R 38		18.4 R 38 600/65 R 38 520/70 R 38 460/85 R 38	
Crawler 	I	1	0,55	*0,34*	0,53	*0,33*
		2	0,65	*0,40*	0,62	*0,39*
		3	0,76	*0,47*	0,73	*0,45*
		4	0,89	*0,55*	0,86	*0,53*
	II	1	0,84	*0,52*	0,80	*0,50*
		2	0,98	*0,61*	0,94	*0,58*
		3	1,15	*0,71*	1,11	*0,69*
		4	1,35	*0,84*	1,30	*0,81*
	III	1	1,24	*0,77*	1,79	*1,11*
		2	1,45	*0,90*	1,39	*0,86*
		3	1,71	*1,06*	1,64	*1,02*
		4	2,00	*1,24*	1,92	*1,19*
	IV	1	1,92	*1,19*	1,84	*1,14*
		2	2,24	*1,39*	2,15	*1,34*
		3	2,65	*1,65*	2,54	*1,58*
		4	3,10	*1,93*	2,97	*1,84*
Field 	I	1	2,21	*1,37*	2,12	*1,32*
		2	2,59	*1,61*	2,48	*1,54*
		3	3,06	*1,90*	2,93	*1,82*
		4	3,58	*2,22*	3,43	*2,13*
	II	1	3,34	*2,07*	3,20	*1,99*
		2	3,91	*2,43*	3,75	*2,33*
		3	4,62	*2,87*	4,43	*2,75*
		4	5,40	*3,35*	5,18	*3,22*
	III	1	4,95	*3,07*	4,74	*2,94*
		2	5,79	*3,60*	5,55	*3,45*
		3	6,83	*4,24*	6,55	*4,07*
		4	8,00	*4,97*	7,67	*4,76*
	IV	1	7,67	*4,76*	7,36	*4,57*
		2	8,98	*5,58*	8,61	*5,35*
		3	10,60	*6,58*	10,17	*6,32*
		4	12,41	*7,71*	11,90	*7,39*
Road 	I	1	8,29	*5,15*	7,95	*4,94*
		2	9,70	*6,02*	9,30	*5,78*
		3	11,45	*7,11*	10,98	*6,82*
		4	13,40	*8,32*	12,86	*7,99*
	II	1	12,52	*7,77*	12,01	*7,46*
		2	14,66	*9,10*	14,06	*8,73*
		3	17,30	*10,74*	16,59	*10,30*
		4	20,25	*12,58*	19,42	*12,06*
	III	1	18,54	*11,51*	17,78	*11,04*
		2	21,70	*13,48*	20,81	*12,92*
		3	25,61	*15,90*	24,56	*15,25*
		4	29,98	*18,62*	28,75	*17,85*
	IV	1	28,76	*17,86*	27,58	*17,13*
		2	33,66	*20,90*	32,28	*20,05*
		3	39,73	*24,67*	38,10	*23,66*
		4	41,96 (1)	*26,06*	40,24 (1)	*24,99*

(1) At 1985 rpm

TABLES OF FORWARD SPEEDS (TWINSHIFT TRANSMISSION)

RANGE	SPEED	SPEED	ARES 546 - 556 - 566 - 616 Road speeds in km/h and *m.p.h.* at 2200 rpm with rear tyres:									
			13.6 R 38 340/85 R 38		16.9 R 38 480/70 R 38 540/65 R 38		18.4 R 38 520/70 R 38 600/65 R 38		540/65 R 34 480/70 R 34		18.4 R 34 460/85 R 34 520/70 R 34	
Crawler	I	1	0,57	*0,35*	0,61	*0,38*	0,63	*0,39*	0,57	*0,35*	0,59	*0,37*
		2	0,71	*0,44*	0,77	*0,48*	0,79	*0,49*	0,72	*0,45*	0,72	*0,45*
	II	1	0,85	*0,53*	0,92	*0,57*	0,95	*0,59*	0,86	*0,53*	0,89	*0,55*
		2	1,08	*0,67*	1,16	*0,72*	1,20	*0,75*	1,09	*0,68*	1,12	*0,70*
	III	1	1,18	*0,73*	1,27	*0,79*	1,31	*0,81*	1,79	*1,11*	1,23	*0,76*
		2	1,49	*0,93*	1,61	*1,00*	1,66	*1,03*	1,50	*0,93*	1,55	*0,96*
	IV	1	1,71	*1,06*	1,84	*1,14*	1,90	*1,18*	1,72	*1,07*	1,78	*1,11*
		2	2,16	*1,34*	2,32	*1,44*	2,40	*1,49*	2,18	*1,35*	2,25	*1,40*
Field	I	1	2,30	*1,43*	2,40	*1,49*	2,50	*1,55*	2,30	*1,43*	2,30	*1,43*
		2	2,90	*1,80*	3,10	*1,93*	3,20	*1,99*	2,90	*1,80*	3,00	*1,86*
	II	1	3,40	*2,11*	3,70	*2,30*	3,80	*2,36*	3,40	*2,11*	3,60	*2,24*
		2	4,30	*2,67*	4,60	*2,86*	4,80	*2,98*	4,40	*2,73*	4,50	*2,79*
	III	1	4,70	*2,92*	5,10	*3,17*	5,20	*3,23*	4,80	*2,98*	4,90	*3,04*
		2	6,00	*3,73*	6,40	*3,97*	6,60	*4,10*	6,00	*3,73*	6,20	*3,85*
	IV	1	6,90	*4,28*	7,30	*4,53*	7,60	*4,72*	6,90	*4,28*	7,10	*4,41*
		2	8,70	*5,40*	9,30	*5,78*	9,60	*5,96*	8,70	*5,40*	9,00	*5,59*
Road	I	1	9,10	*5,65*	9,70	*6,02*	10,00	*6,21*	9,10	*5,65*	9,40	*5,84*
		2	11,50	*7,14*	12,30	*7,64*	12,70	*7,89*	11,50	*7,14*	11,90	*7,39*
	II	1	13,70	*8,51*	14,70	*9,13*	15,20	*9,44*	13,80	*8,57*	14,30	*8,88*
		2	17,30	*10,74*	18,60	*11,55*	19,20	*11,92*	17,40	*10,81*	18,00	*11,18*
	III	1	19,00	*11,80*	20,30	*12,61*	21,00	*13,04*	19,10	*11,86*	19,70	*12,23*
		2	24,00	*14,90*	25,70	*15,96*	26,60	*16,52*	24,10	*14,97*	24,90	*15,46*
	IV	1	27,50	*17,08*	29,50	*18,32*	30,40	*18,88*	27,60	*17,14*	28,60	*17,76*
		2	34,70	*21,55*	37,30	*23,16*	38,50	*23,91*	34,90	*21,67*	36,10	*22,42*

TABLES OF FORWARD SPEEDS

The forward speeds indicated are theoretical speeds.

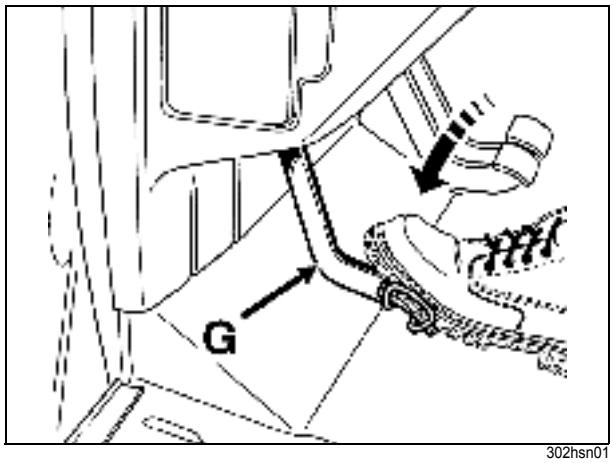
The calculations assume "standardized" tyre diameters. The rear ratios are more or less equal to the front ratios.

Note: These values are given as an indication only. They are dependent on 3 parameters:

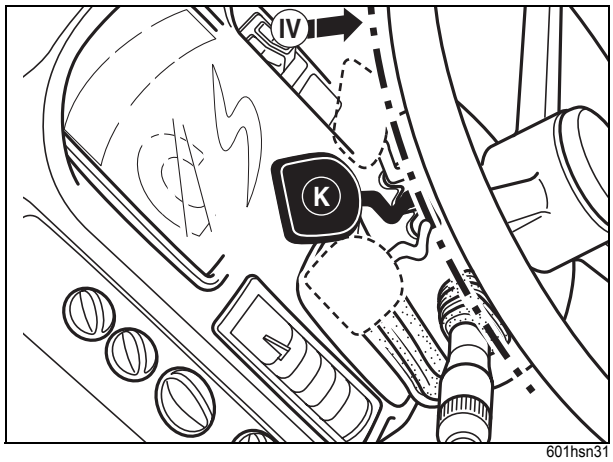
- ***Tyre inflation pressure ;***
- ***Tyre wear ;***
- ***Wheelspin coefficient.***

Only a measurement in the field under working conditions can give an accurate value. The speeds are expressed in km/h, to convert them into mph proceed as follows:

- ***1 km/h = 0,621 mph ;***
- ***1 mph = 1,609 km/h.***



302hsn01



601hsn31

CLUTCH (3 POSSIBILITIES)

1. THE PEDAL (G)

Press the pedal fully down to disengage. The pedal enables greater control when attaching a tool or during a difficult maneuver.

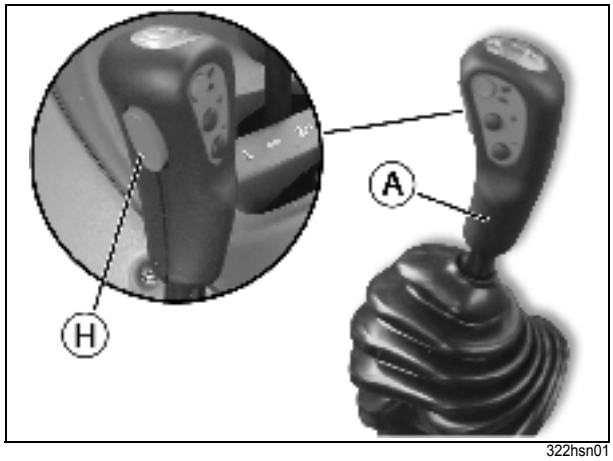
Important: With the exception of approach manoeuvres, when depressing the clutch, we advise you to release the pedal completely (excessive slipping risks causing serious wear to the clutch).

2. LEVER (K)

To release the clutch, raise lever (K) of the reverser under torque in position (IV). Engage the desired gear holding the lever in this position, then release it to engage the clutch.

3. THE BUTTON (H)

To release the clutch, press button (H) located on the knob of the gear lever (A). Engage the desired gear holding down the button, then release it to engage the clutch.



322hsn01

GEARBOX

If you have to leave the driving seat leaving the engine running:

- Apply the hand brake ;
- Move the accelerator lever to the idle position ;
- The reverser lever (F) in neutral ;
- Move the gear lever (A) to neutral.

REVERSER LEVER UNDER TORQUE

OPERATION OF HYDRAULIC REVERSER (REVERSHIFT) (F)

It has 4 positions. The direction of operation is indicated on the display by three indicators:

I - Forward gear (indicator 1 on).

II - Neutral (indicator 2 on).

III - Reverse gear (indicator 3 on).

IV - De-clutched.

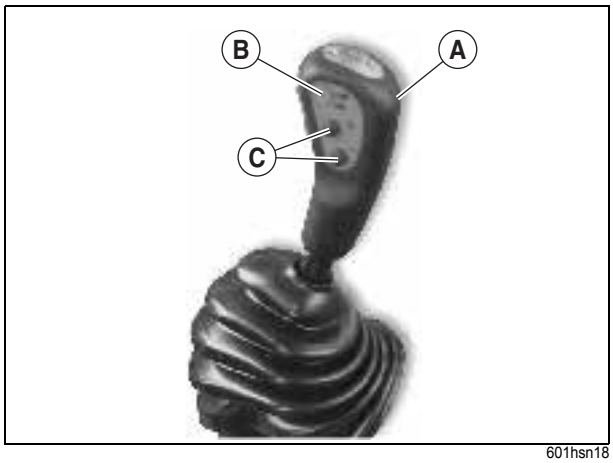
To shift from forward to reverse, move lever (F) directly from position (I) to position (III).

To shift from reverse to forward, do the opposite: move lever (F) directly from position (III) to position (I).

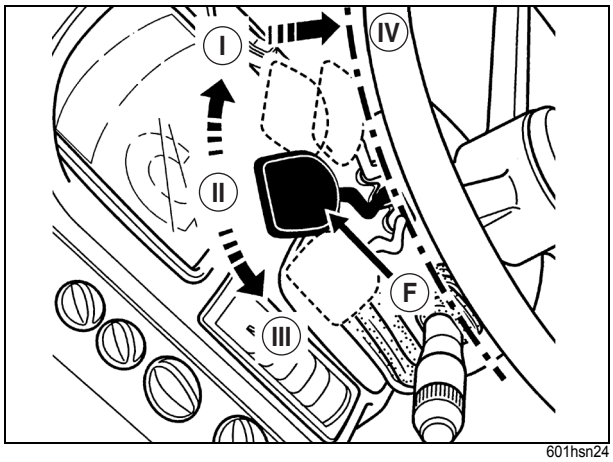
When in positions positions I and III, if the reverser lever is pulled towards the steering wheel (position IV), the tractor drive is declutched.

Important: When the load being towed is heavy or for manoeuvres requiring a rapid reaction time (e.g. : on the road when setting off again from a STOP sign), it is preferable to use the clutch pedal instead of the reverser lever to engage the clutch. If operating direction reversal is requested when the tractor is running at high speed (for example, 30 km/h), the electronic processor (DRIVETRONIC) accepts the request and engages reverse. Reversal of the operating direction under these conditions is not normal and entails an engine stall. Therefore, it is necessary to reduce the tractor speed sufficiently (speed less than 10 km/h) before reversing.

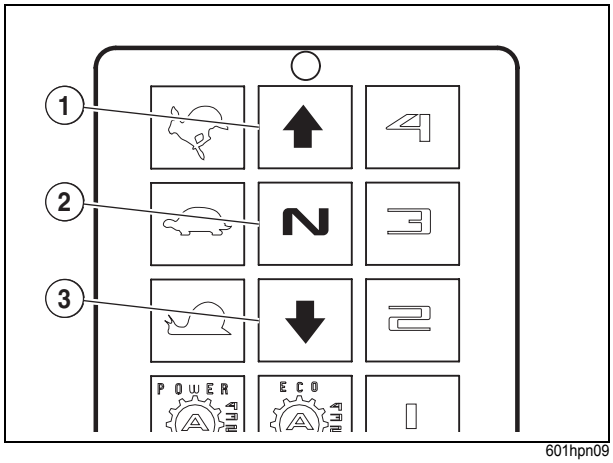
On a downhill slope, always keep in gear and never declutch.



601hsn18



601hsn24



601hpn09

GEAR LEVER

GEAR SELECTION (A)

Lever (A) can be used when the tractor is moving. To do this, release the accelerator pedal, press the clutch pedal, engage the selected gear, clutch gradually, and accelerate.

SELECTION OF THE "HARE" ROAD AND "TORTOISE" FIELD RANGES (B)

The road and field ranges are hydraulically controlled: the range can be changed only with the engine running. To select the desired range, bring the gearshift lever (A) back to neutral, then press the range button (B). The change of range can be observed on the display (the hare (2) or tortoise (1) symbol lights up). A change of range can be performed with the tractor in motion provided:

- The change of field/road range is made at a forward speed of less than 8 km/h.

Note: When the engine is started, the range gear is the same as that engaged when the engine was stopped.

SELECTION OF SPEED (C)

The speed is changed using the 2 impulse buttons (C), placed on the gear lever (A) or on the right side post.

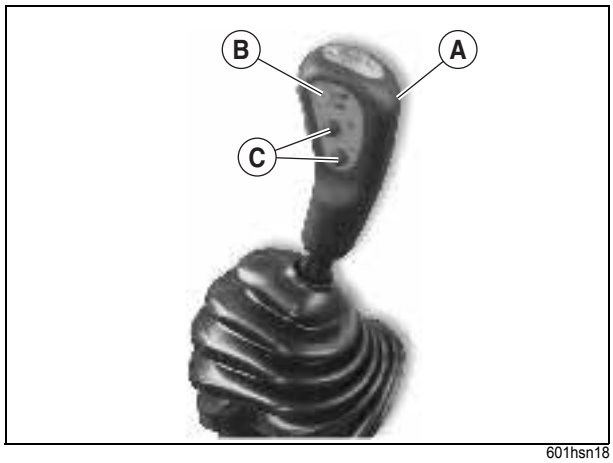
The function of TWINSHIFT or QUADRISHIFT is to reduce or increase the forward speed while working, without affecting the traction force, by going under torque.

Activate one of the impulse buttons (C):

- Upper (+)impulse button to increase speed ;
- Lower (-) impulse button to decrease speed.

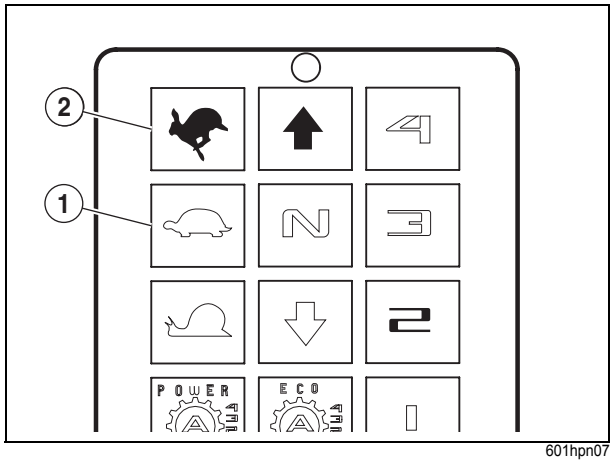
The speed selected is shown on the display. If the driver presses button (C) several times, the request is memorised. Going through speeds 2 and 3 of QUADRISHIFT is obligatory.

Note: When the engine is started up, it is still in the last speed selected when the engine stopped.



601hsn18

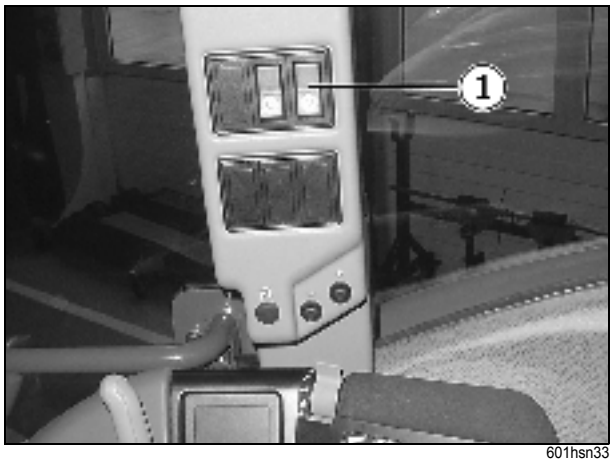
601hsn30



601hpn07

QUADRISHIFT II FUNCTION

Switch (1) is used to activate or de-activate the QUADRISHIFT II function. Activation of the QUADRISHIFT function is displayed by the warning light of switch (1) coming on. The QUADRISHIFT II function selects the gear best suitable for the forward speed when the driver changes gears.



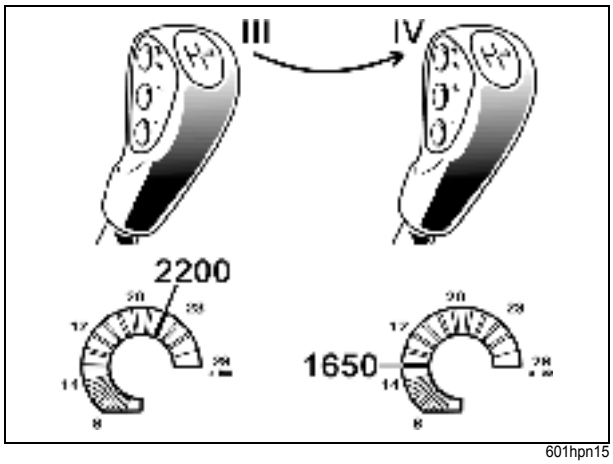
601hsn33

SHIFTING ONE GEAR UP

When you change gears, a drop of the engine speed is generated (figure 1). When towing a high load, it is necessary to decrease the torque ratios when shifting gears up so as to maintain an optimal engine speed to accelerate.

Action of QUADRISHIFT II:

In this case, the QUADRISHIFT II function automatically selects the torque ratio when a gear shift occurs to avoid any under-speed (figure 2).



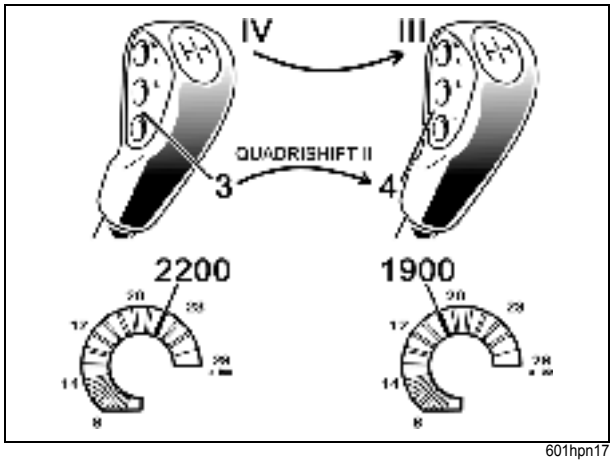
601hpn15

SHIFTING ONE GEAR DOWN

When you change gears, an increase of the engine speed is generated. It is then necessary to increase the torque ratios when shifting gears down so as to avoid any engine over-speed.

Action of QUADRISHIFT II:

In this case, the QUADRISHIFT II function automatically selects the torque ratio when a gear shift occurs to avoid any engine over-speed.



601hpn17

QUADRACTIV FUNCTION

The QUADRACTIV function automatically shifts the Quadrupler gears, depending on the engine speed and the accelerator pedal position (see graph). Two operating modes are available, depending on the type of work: The POWER mode and the economy mode.

The three-position switch (1) enables you to:

- De-activate the QUADRACTIV mode ;
- Activate the economy mode ;
- Activate the power mode.

Activation of the QUADRACTIV function is displayed by the following warning lights (3) et (4) on the display panel.

Note: When the QUADRACTIV function is selected, the QUADRISHIFT II function is automatically activated, whatever the position of its switch.

POWER MODE (INDICATOR (3) ON)

This operating mode is suitable for work at full power. It enables you to use all of the resources of your tractor. The graph opposite shows the management of gear shifts by the function, in the power mode.

Condition for shifting to next higher gear (area A on the graph):

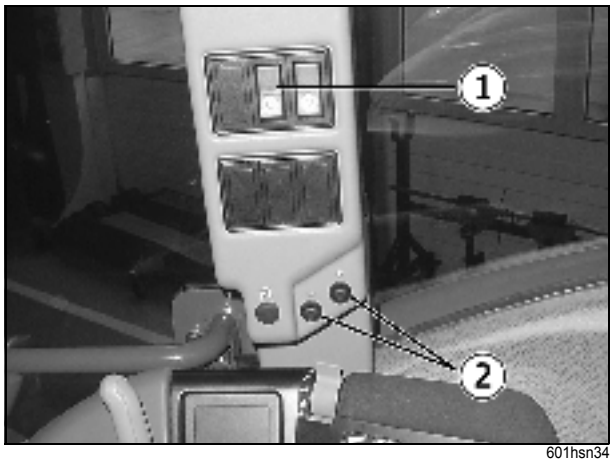
A - Accelerator pedal depressed by more than 85% of its overall travel + engine speed higher than 2100 rpm.

Condition for shifting to lower gear (areas B, C and D on the graph).

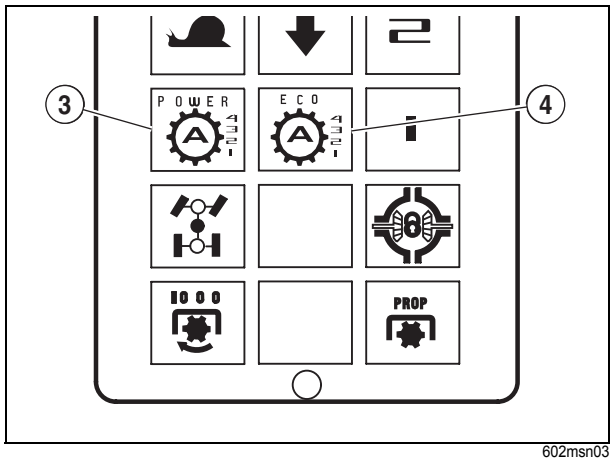
B - Accelerator pedal depressed by more than 85% of its overall travel + engine speed less than 1680 rpm.

C - Accelerator pedal depressed by 25 to 85% of its overall travel + engine speed less than 20% relative to accelerator rating.

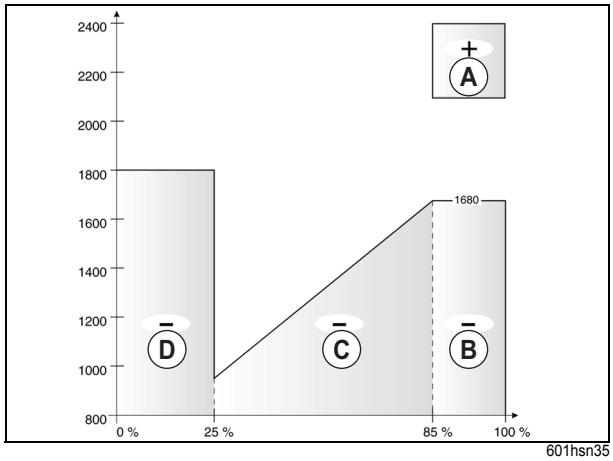
D - Accelerator pedal depressed by less than 25% of its overall travel + engine speed less than 1800 rpm (engine braking function).



601hsn34



602msn03



601hsn35

ECO MODE (INDICATOR (4) ON)

This mode is suitable to fuel savings. Work is performed at a lower engine speed, where specific consumption is low. The graph illustrates gear shifting by the automatic system in economy mode.

Condition for shifting to next higher gear (area A on the graph):

A - Accelerator pedal depressed by more than 85% of its overall travel + engine speed higher than 1680 rpm.

Condition for shifting to lower gear: (areas B, C and D on the graph).

B - Accelerator pedal depressed by more than 85% of its overall travel + engine speed less than 1350 rpm.

C - Accelerator pedal depressed by 25 to 85% of its overall travel + engine speed less than 20% relative to accelerator rating.

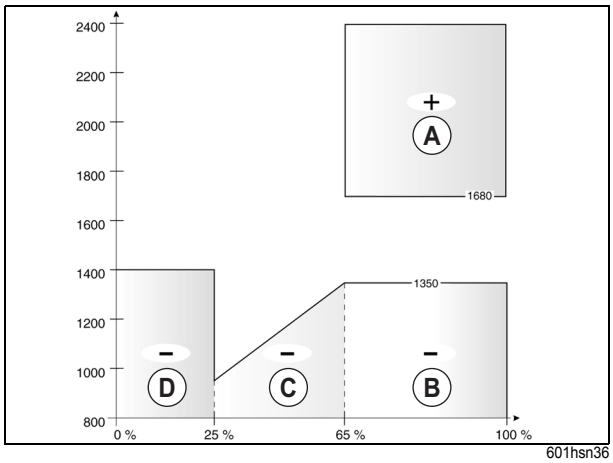
D - Accelerator pedal depressed by less than 25% of its overall travel + engine speed less than 1400 rpm (engine braking function).

QUADRACTIV ACTION LIMITING

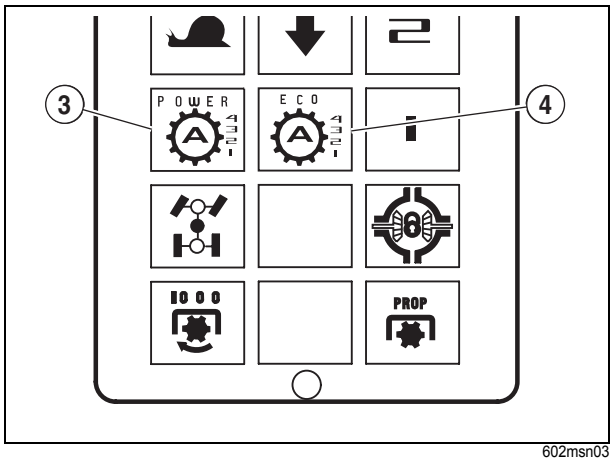
It is possible to limit the action of the QUADRACTIV on 2 or 3 of the 4 quadrupler torque ratios. This function enables you to restrict the forward speed.

- Activate the Quadractiv function in Eco or Power mode by pressing switch (1).
- Select a motion direction, using the reverser (G).
- Engage a mechanical ratio with the gear lever (E).
- Move the tractor.
- Then select the torque ratio you do not want to exceed, using buttons (2) "+" and "-" on the gearshift lever or those located in the right-hand pillar of the cab.

The function takes your request into account automatic gear shifting is performed only within the desired gear range.



601hsn36



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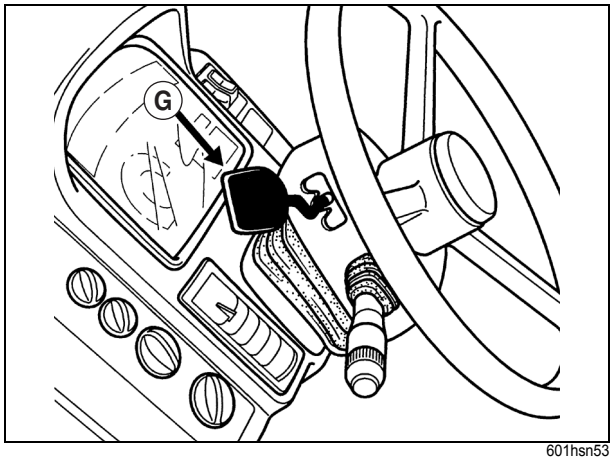
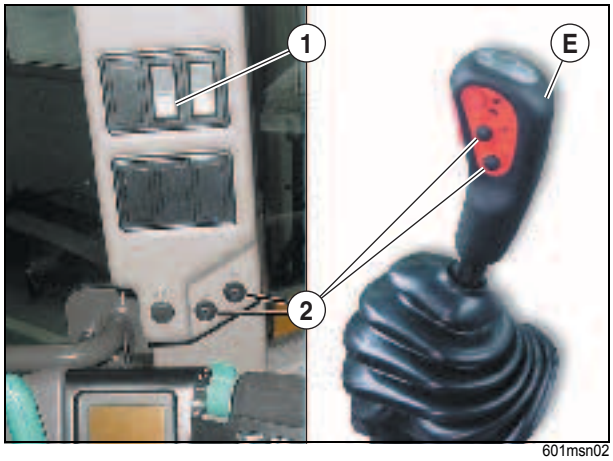


601hsn53



601msn02

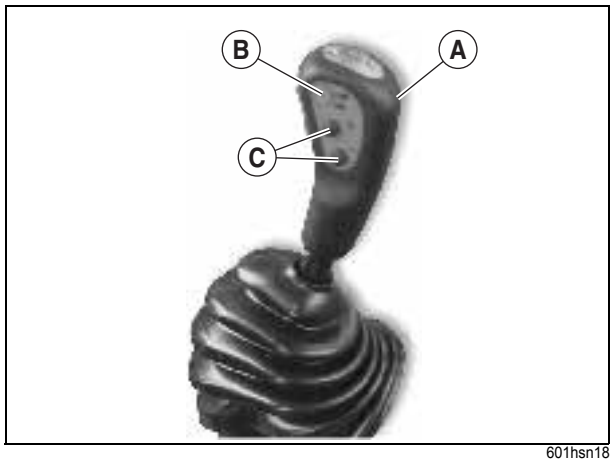
CRAWLER RANGE LEVER

The crawler range is obtained by placing the lever (F) to the snail position.

Once field (tortoise) range is selected using the lever (B), lower lever (A) and crawler (snail) range is engaged.

The "snail" crawling range is engaged: The "tortoise" light goes out and the "snail" light comes on.

Important: Only move the crawler range lever (F) when the tractor is completely stopped and field range is selected. Never use crawler range to obtain more tractive power than is available in field range.



601hsn18

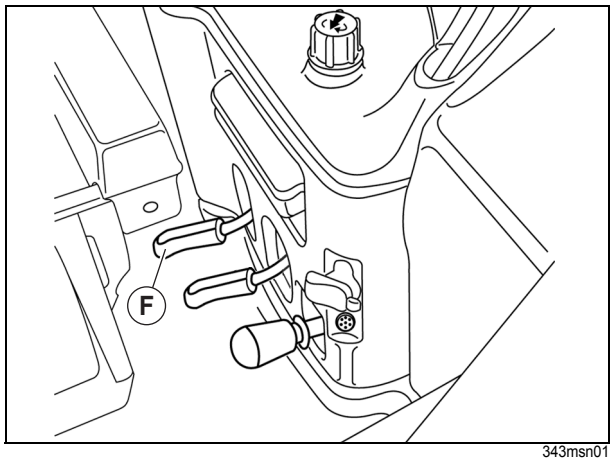
PROTECTION OF MECHANICAL PARTS

ENGINE PROTECTION

To avoid over-revving the engine, DRIVETRONIC will not allow a higher speed to be selected if the engine speed is above 2400 rpm. In this situation the speed selected flashes to tell the driver that the request has been memorised. It will be carried out later, when the engine speed has dropped enough to remove any risk of over-revving.

ANTI-STALLING FUNCTION (SPECIFIC TO QUADRISHIFT

The DRIVETRONIC will not allow a higher speed to be engaged (e.g. : from 3 to 4) if at the latest change of speed (e.g. : from 2 to 3) the engine speed dropped by more than 12 % without picking up again. In this situation the light for the selected gear flashes and the request is memorised.



343msn01

MONITORING OF OIL TEMPERATURE WHEN COLD (SPECIFIC TO "QUADRISHIFT")

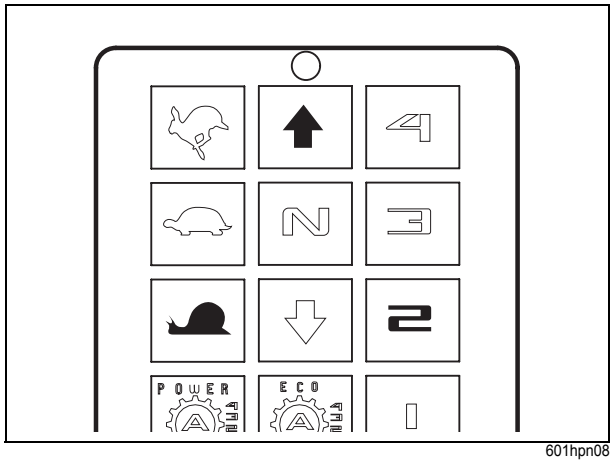
DRIVETRONIC is able to advise the driver of the style of driving to adopt using 3 levels of warning:

1 - If the temperature is too low (lower than 5°), the lights of speeds 1 and 4 flash.

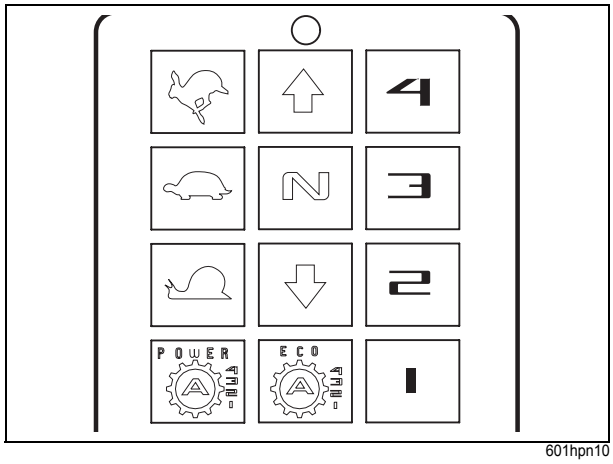
2 - If the temperature is too low and the speed too high, the lights of speeds 1, 2, 3 and 4 flash.

3 - If the temperature is too low and the speed even higher, the DRIVETONIC takes the initiative of dropping down a gear.

When one of the alarm levels is active, the gears under load cannot be used.



601hpn08



601hpn10

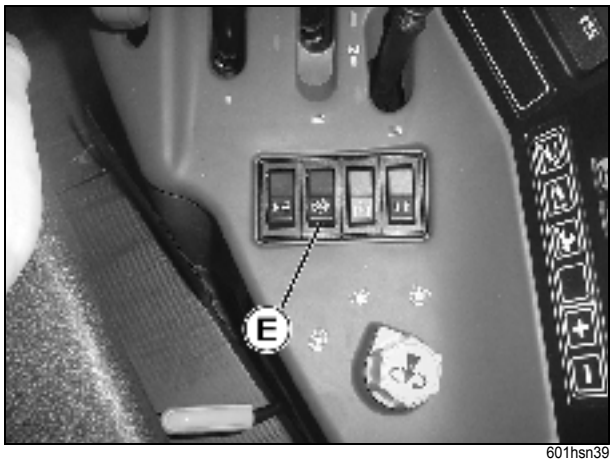
DIFFERENTIAL LOCK

- Do not wait for one wheel to slip before locking the differential.
- Do not lock the differential when the wheel is slipping at high speed.
- When the tractor is started the differential is always unlocked, whatever the state memorised when the engine stopped.

ENGAGEMENT

Engagement of the rear and front differential lock is obtained by pressing the button (E) (Ares 696). For the other models (self-locking front axle) the differential lock engagement is obtained by pressing switch (E). The engagement takes place at a speed lower than 14 km/h. Lights (K) and (J) come on and the front axle is engaged.

To disengage the differential lock(s), press switch (E) again. Light (K) goes out (the front axle remains engaged and light (J) remains on).



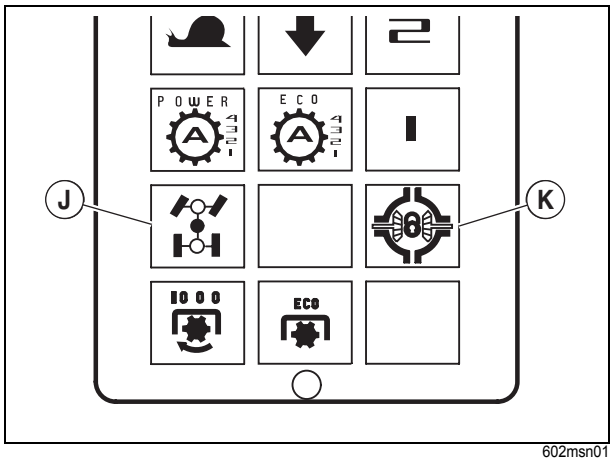
601hsn39

ELECTRONIC MANAGEMENT OF THE REAR AND FRONT DIFFERENTIALS BY DRIVETRONIC

TEMPORARY DISENGAGEMENT

During implement lifting if the linkage rods are not in the working position, the differential lock is disengaged.

When the linkage returns to the working position the differential lock is automatically reengaged.



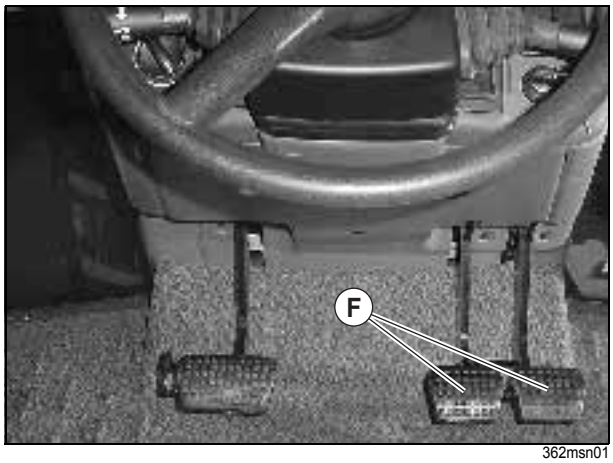
602msn01

PERMANENT DISENGAGEMENT

- When the forward speed exceeds 14 km/h.
- When either of the brake pedals is used, (F) the differential lock disengages permanently unless temporary disengagement by the linkage has already been already activated.

Rear and front differential blocking is only to be used when running in a straight line. It must be cancelled before any movement of the steering wheel (in continuous engagement).

Never lock the differential when operating on the road



362msn01

BRAKE PEDALS

On the road, the 2 brake pedals (F) must be coupled together.

394msn01

TRAILER BRAKE

HYDRAULIC BRAKING (1)

Connect the trailer flexible hose to the pressure connector (1).

Trailer braking is proportional to the effort on the brake pedals (pedals coupled together).

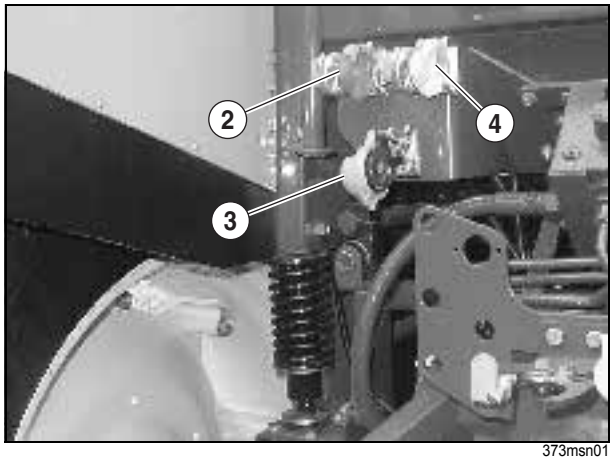
PNEUMATIC BRAKING

Connect the trailer flexible hoses according to the colours on the coupling heads:

For trailers with only one flexible hose, use the black coupling (3).

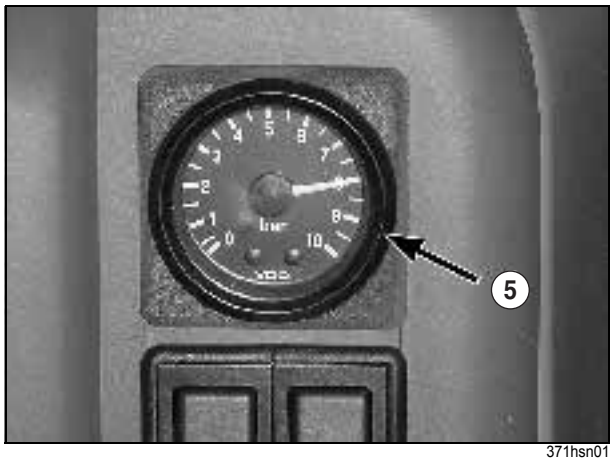
For trailers with two flexible hoses, use the yellow 4 and red 2 couplings.

The pressure gauge (5) located on the right of the dashboard indicates air pressure inside the reservoir. Trailer braking is proportional to the effort on the brake pedals (pedals coupled together).



373msn01

Connect the trailor hitching heads to free the trailor brakes. It is only after the service pressure is obtained that the trailor braking system is operational. When stationary, apply the hand brake to brake the trailor.



371hsn01

REAR POWER TAKE-OFF

CHARACTERISTICS

	Ares 546 - 556	Ares 566 - 616	Ares 656	Ares 696
Diameter		1 inch 3/8		
Number of splines		6 or 21		
Direction of rotation (viewed from rear of tractor)	Clockwise			
Position of the PTO in relation to the ground (in mm with basic tyres)	750	775	810	810
Engine speeds (rpm) for standardized PTO speeds				
540	1980			
540 economy	1533			
1000	2000			
1000 economy	1548			
Ratio				
540	3,6			
540 economy	2,8			
1000	2			
1000 economy	1,5			
Number of PTO turns for a wheel turn (proportional)				
In position 540 rpm	30,44			31,04
In position 1000 rpm	55,8			56,91

CONTROLS FOR ENGAGING THE REAR POWER TAKE-OFF

3 positions:

1 - Engaged.

2 - Disengaged.

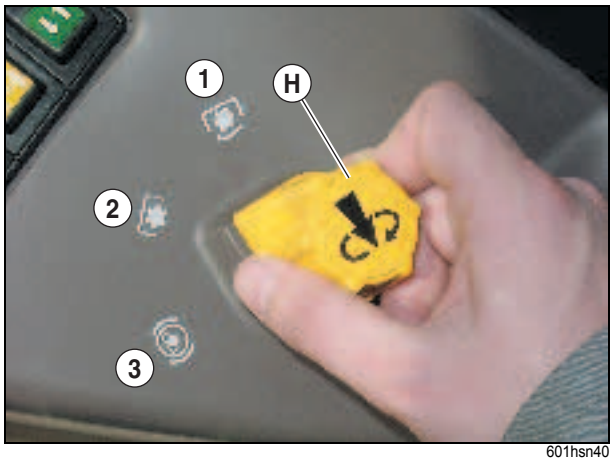
3 - Disengaged and braked.

To engage the power take-off, place the engine in idling speed, press the control button (H) then take it gradually to the (1) "engaged" position.

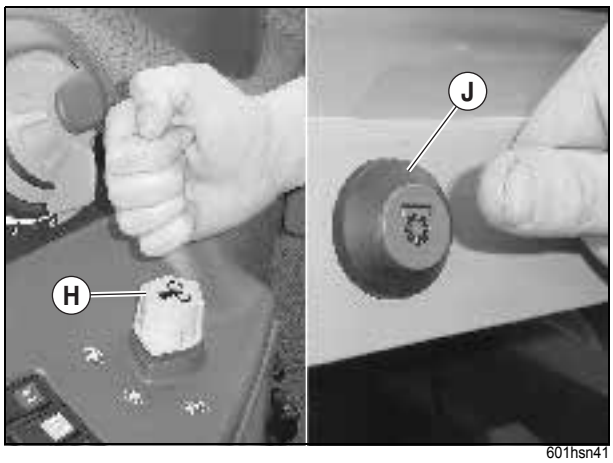
To disengage the power take-off, press control button (H) then take it to position (2).

When control button (H) is on position (3), the PTO shaft is braked.

In an emergency, the rear power take-off can be disengaged by a single punch on the control button (H) or by pressing the push buttons (J) situated behind the wings.



601hsn40

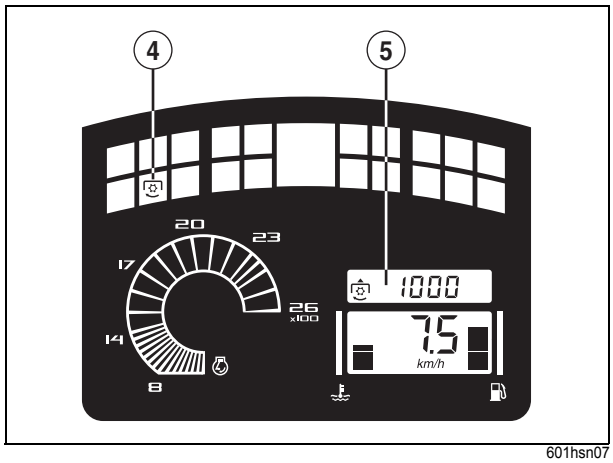


601hsn41

The engagement and speed of the rear power take-off are signalled to the dashboard control console by the light (4) and the display panel (5).

The engagement of the 1000 rpm power take-off is indicated by light (6).

The economical PRO engagement 540 is indicated by warning light (8) and the proportional by warning light (7).



601hsn07

SELECTION OF POWER TAKE-OFF SPEEDS

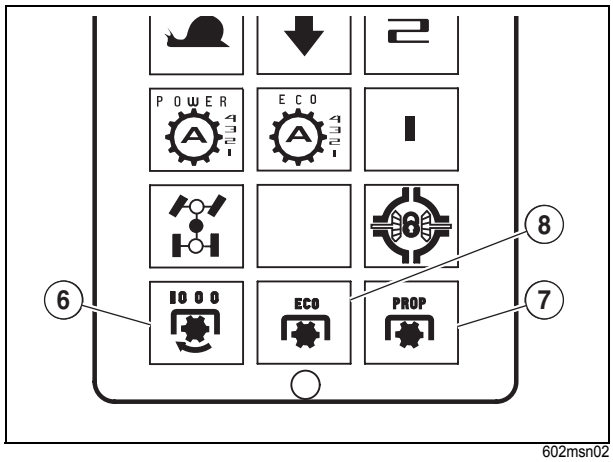
The economical selection levers 540/1000 rpm and 540/1000 rpm are located in the cab on the side of the right console.

- The 540/1000 (K) lever has 2 positions: 540 and 1000 rpm.
- The economical PTO lever (L) has 2 positions : engagedgaged (ECO) and disengaged (540/1000).

Note: To protect the implement in economical speed, the drivetronic disengages the PTO if the engine speed is higher than 1900 rpm.

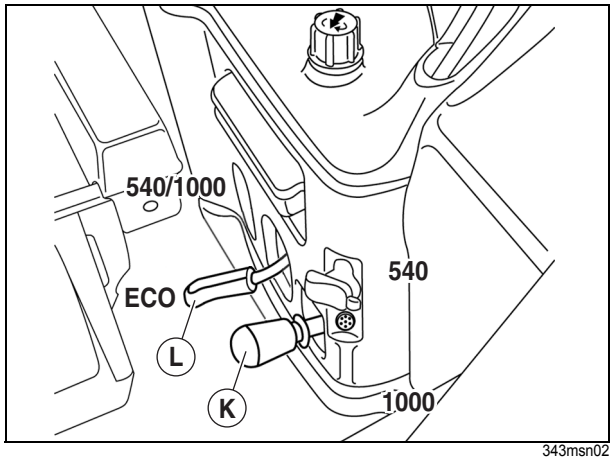
- The proportional PTO lever (M) is located in the cab under the rear window. It must be activated when the PTO is disengaged, and the tractor stopped and when lever (L) is in position 540/1000. Lever (M) can be put in 2 positions: normal (NORM) or proportional (PROP.

Important: To operate the power take-off speed selection lever, the rear power take-off control must be in "de-clutched" position.

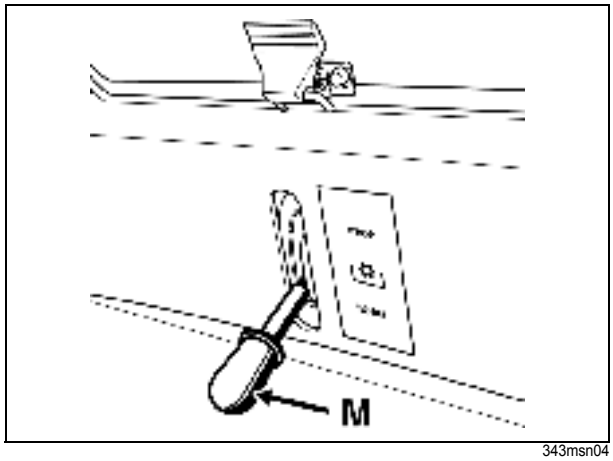


602msn02

When the work with the power take-off is finished, it is imperative to return lever (M) to normal position, before leaving the field.



343msn02



343msn04

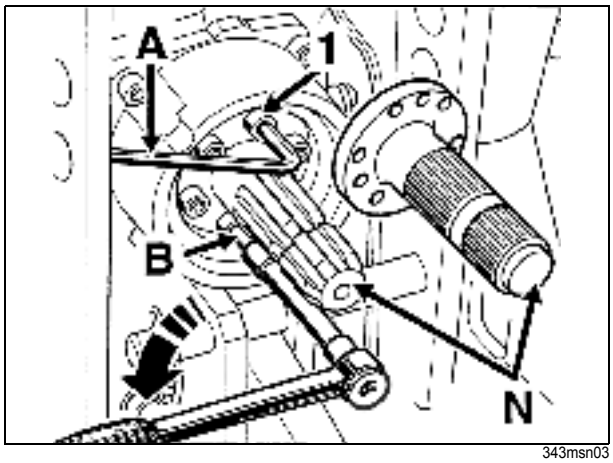
POWER TAKE-OFF END FITTING

During removal / refitting of the rear output shaft, it is essential that the engine is stopped and that no implement is attached to the rear linkage.

To remove the power take off end fitting (N) proceed as follows:

- Put wrench (A) on one of the screws (1).
- Turn the shaft to put the end of the wrench against the right side of the coupling scale.
- Unscrew screws using wrench (B).
- Reposition the required end fitting (6 or 21 splines) using the centring studs and lightly coat the thread of screws (1) with Loctite n° 241 then tighten all screws to the recommended torque (12 to 14 daN.m) with a torque wrench.
- To secure the shaft, follow the same procedure as the one used to disassemble with wrench (A), with the wrench against the left side of the coupling scale.

Important: CLAAS disclaims all liability if an accident is caused by the non respect of the above fitting instructions.



343msn03

HITCHING IMPLEMENTS TO THE POWER TAKE-OFF

Do not wear loose clothing which could catch in moving parts.

The engine must be stopped before coupling or uncoupling the attachment's universal joint shaft.

All guards must be fitted when working.

When repairing, adjusting or lubricating an attachment in the field, always set the PTO lever to neutral and stop the engine.

Set the controls to neutral when not in use.

Only remove the protective sleeve (O) to connect an attachment driven by the PTO. Replace the sleeve as soon as the attachment is disconnected.

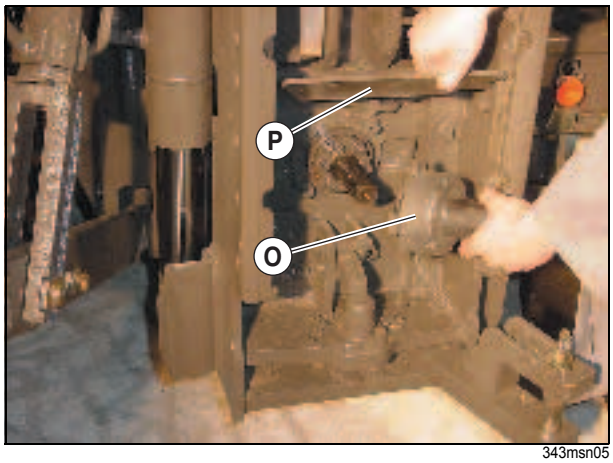
To attach or remove an implement driven by the rear power take-off, remove the safety cover (P) upwards. To release the cover, pull it sideways to the right, then hinge it fully upwards.

When the power tzake-off is not in use, the safety cover (P) and protector (O) must always be in place.

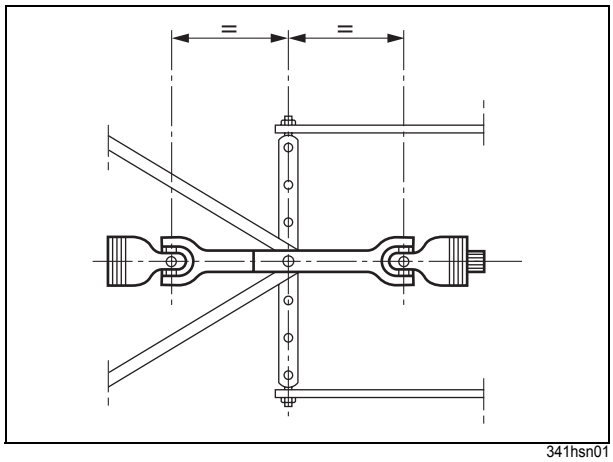
The universal joint shaft must always be aligned with the tractor - tool axis.

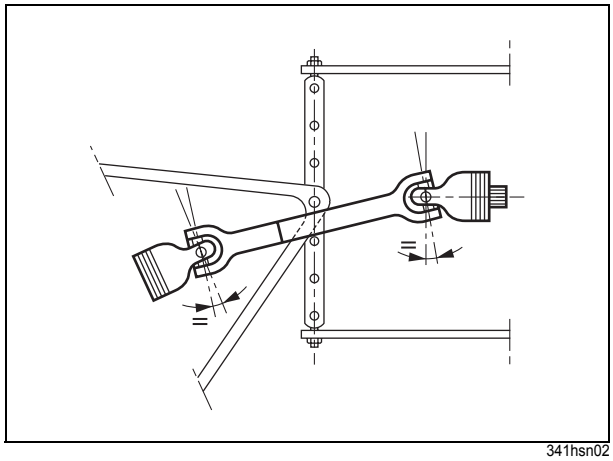
The 2 universal joints must be at an equal distance from the rotation point, so in a bend the angles formed by the shaft joints will be equal.

If this configuration cannot be achieved, use a constant velocity joint.



343msn05


341hsn01

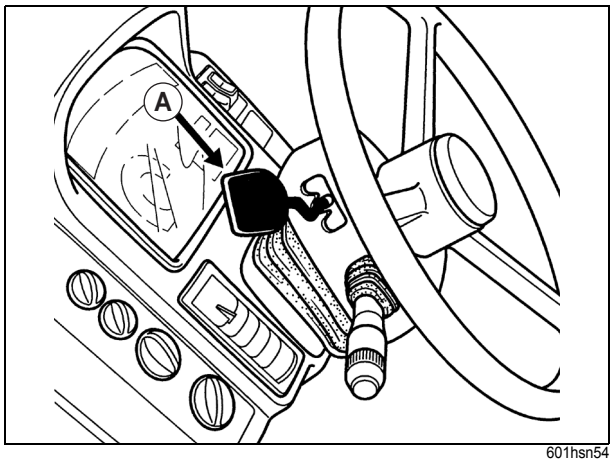

341hsn02

STATIONARY WORKING

When carrying out stationary work, the following instructions must be respected:

- Apply the handbrake.
- Chock the wheels*.
- Forward/reverse lever (A): Neutral position.
- Gear lever (B): Neutral position.
- Range switch (C): Road (hare) range position.

** In accordance with current legislation, some tractors are equipped with a wheel shim (E) on the RH rear wing (press on the shim (E) and pull upwards).*



601hsn54

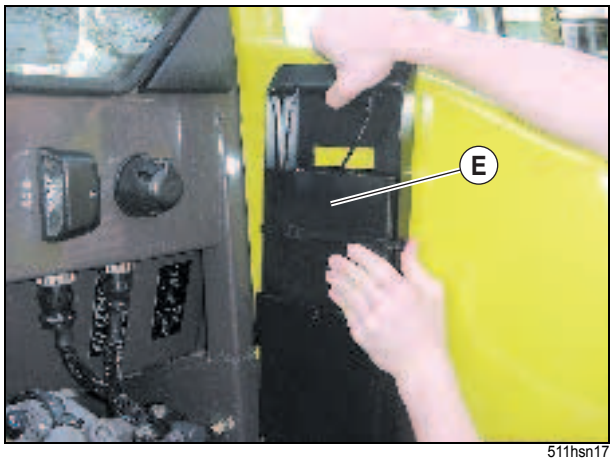
TOWING THE TRACTOR

- Place the reverser lever (A) in neutral.
- Disengage the PTO.
- Release the hand brake.
- Place the gear box in neutral using lever (B)
- Place contactor (C) on the hare position to take off the crawl speed.

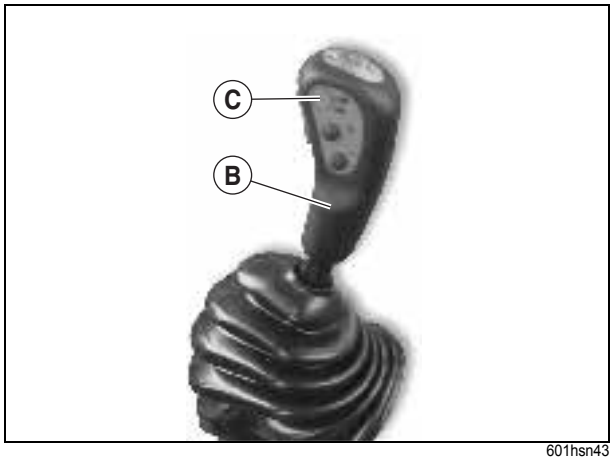
Important: Towing the tractor is only to be undertaken exceptionally, and then only over short distances (less than 1000 metres and 10 km/h). Start the engine to ensure the transmission is lubricated while it is being moved. If it is to be transported over a long distance the tractor must be loaded onto a trailer and tied down.

Important: If the tractor is to be transported on a trailer, all apertures must be closed and the exhaust outlet at the end of the silencer blanked off.

Important: Ignoring these instructions can in some situations cause considerable damage to the gearbox.



511hsn17



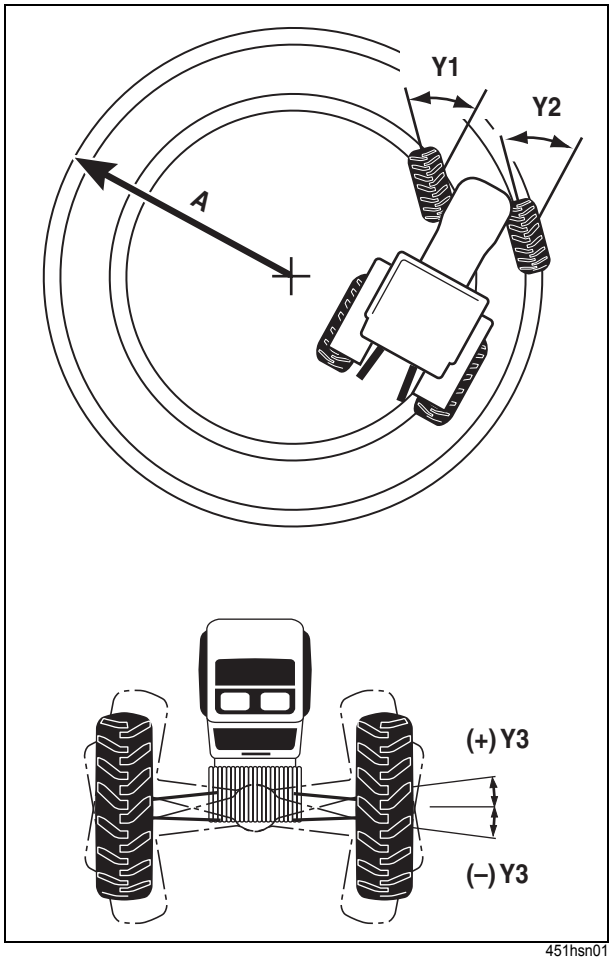
601hsn43

Notes

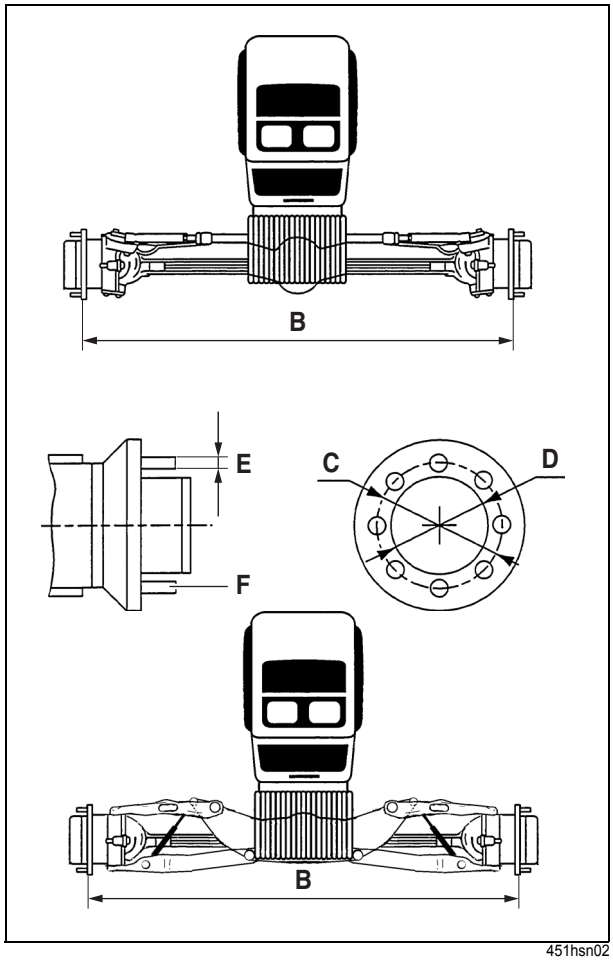
F - FRONT AXLE

CHARACTERISTICS

	Ares 546 - 556	Ares 566 616 - 656	Ares 696	Ares 696	Ares 546 - 556 566 - 616 - 656
Type	20.19-1 Rigid	20.22-1 Rigid	20.29-3 Rigid	20.29-6 Proactiv	20.29-10 Proactiv
Inner steering angle Y1	55°				
Outer steering angle Y2	42°				
Swing angle Y3	10	10	10	8°	8°
Steering radius (mesured in mm at the centre of the tyre) (A)	4,2	4,6 (4,2- 566)	4,6	4,85	4,85 (616 - 656) 4,51
Between wheel face plates (in mm) (B)	1900	1900	1850	1900	1900
Diameter of stud ring (in mm) (C)	275	335	335	335	335
Diameter of wheel alignment boss (in mm) (D)	220,8	280	280	280	280
Stud diameter (in mm) (E)	M20 x 1.5				
Number of studs (F)	8	8	10	10	10
Front/Rear inter-axle ratio	1,3323	1,31148	1,31941	1,31941	1,3471
Differential locking	Self-locking	Self-locking	Electrohydraulic	Electrohydraulic	Self-locking



451hsn01



451hsn02

FRONT AXLE ENGAGEMENT

OPERATING MODE

Engine stopped or forward speed nil : the front axle is automatically engaged (safety, braking on the 4 wheels).

As it moves, the tractor resumes the situation memorised when the engine stopped.

When the front axle is engaged, warning light (B) on the display panel comes on.

AUTOMATIC MODE

The front axle is automatically engaged when the speed drops below 14 km/h (light (B) on).

The front axle is automatically disengaged when the speed goes above 14 km/h (light (B) off).

This mode is obtained by a single pressure on switch (I).

To disengage the front axle, press switch (I) again.

OVERRIDE MODE

The front axle is permanently engaged (warning light (B) flashes, except if the differential lock is already engaged).

This is obtained by:

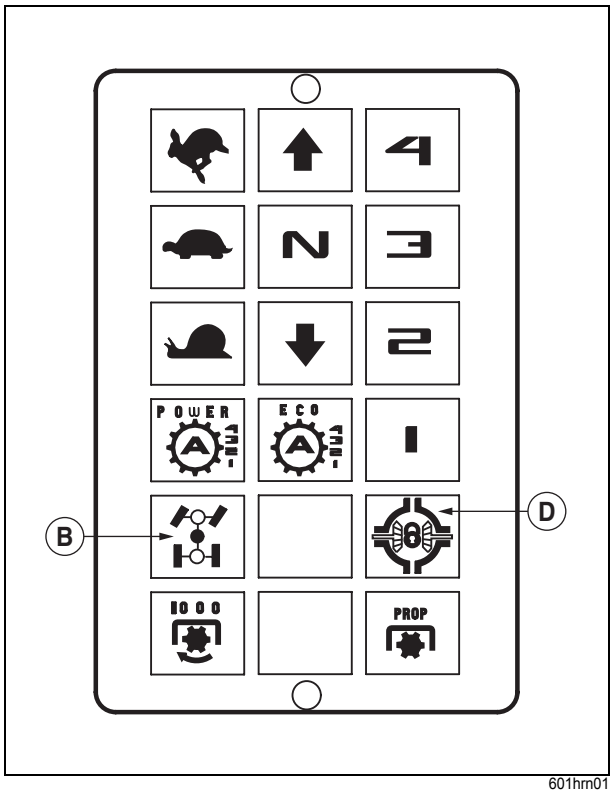
- Pressing switch (I) when the speed is higher than 14 km/h.
- Press switch (I) for more than 2 seconds when the speed is lower than 14 km/h.

To disengage the front axle, press switch (I) again.

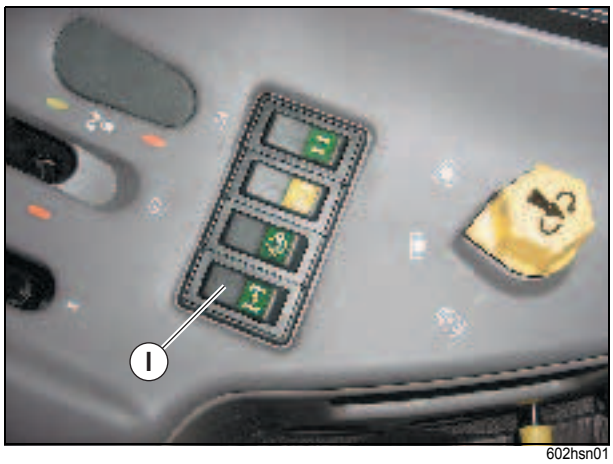
BRAKE SYSTEM

For reasons of efficiency and safety, the automatic system manages the front axle engagement to guarantee braking on the 4 wheels ; one condition : the pedals must be coupled together.

As soon as the brake pedals are applied, the automatic system engages the front axle and the light comes on. The Drivetronic disengages the front axle and turns off light (B) as soon as the action on the brake pedals ceases.



601hrn01



602hsn01

DIFFERENTIAL LOCKING

The Drivetronic engages the front axle as soon as the differential lock is applied (front axle/rear axle) by pressing contactor (C). Lights (B) and (D) come on.

Note: The Drivetronic does not disengage the front axle when the differential lock is released (light (B) stays on).

Note: Only the differential lock of the front and rear axles of the Ares 696 engages simultaneously.

For more details about the management of the front and rear differential lock according to the speed and steering angle, refer to chapter E.

602hsn02

PROACTIV FRONT AXLE SUSPENSION

Switches (1) et (2), located in the driving position, manage the suspension.

Note: In cold weather, the suspension response time is increased.

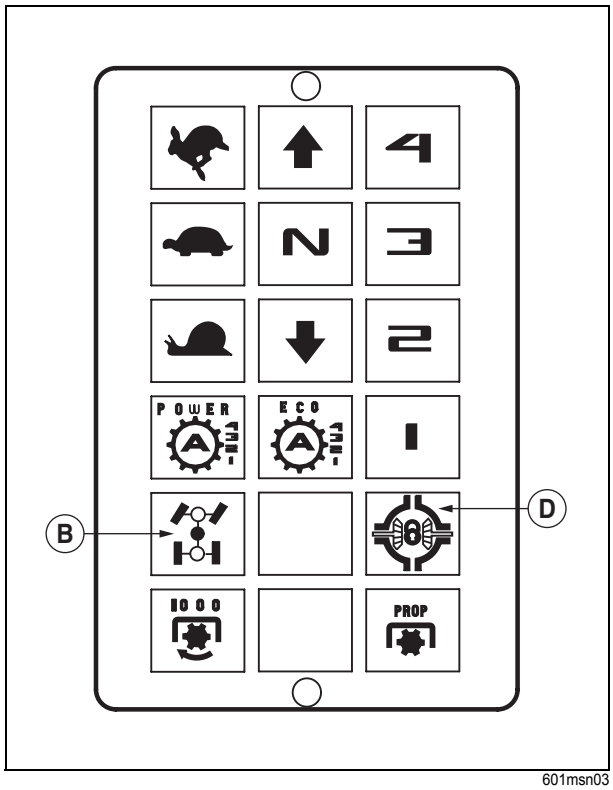
The (1) to 2 position pulse switch. It is used to select the suspension mode of function.

- Position (I) = suspension deactivated

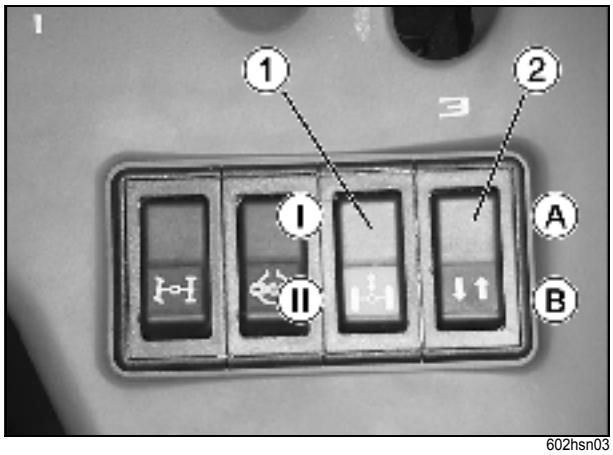
When the suspension is deactivated, the nose of the tractor is in a low position. This position is recommended when the front linkage is being used.

This position is intended for difficult conditions such as ploughing and operations in deep soils.

Note: If the switch remains in the deactivated position for too long, it is normal for the response time to be increased when the manual or automatic mode is required.



601msn03



602hsn03

- Position (II) = suspension activated

2 modes are accessible in this position:

1. Automatic mode:
   - The switch's warning light is on.
   - The nose of the tractor is in a medium position.

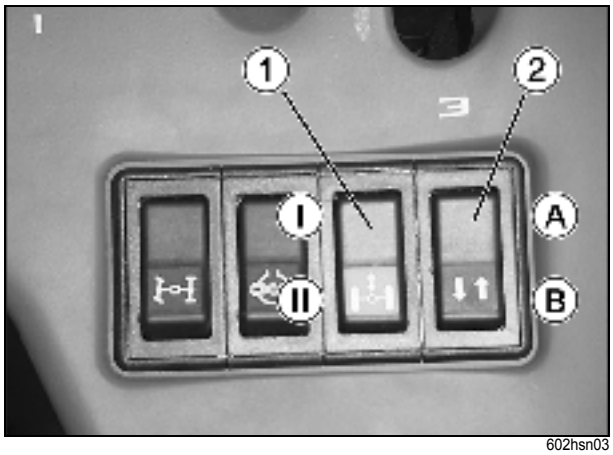
This mode is for transit operations to improve driver comfort.

Note: Above 14 km/h, use this mode to improve comfort.

2. Manual:
   - Activate switch (2) towards (A) to raise or towards (B) to lower the tractor nose.
   - The light of switch (1) is off.

The maxium up position must only be used occasionally and certainly not in difficult conditions.

Note: To return to the automatic function, simply give one press on switch (1) towards (II). If the light of switch (1) flashes, consult an authorised CLAAS agent.



602hsn03

Notes

G - HYDRAULICS - LINKAGE AND REAR HITCH

CHARACTERISTICS

LINKAGE

Linkage: Electronic Tracto-Control	TCE 15	TCE 25	TCE 15T
Functions			
Position display	Yes	Yes	Control knob position
Force control	Automatic	Automatic	Automatic
Mixed control	Yes	Yes	Yes
Travelling damper	Yes	Yes	Yes
Upper limit adjustment	Yes	Yes	Yes
Sensitivity adjustment	Yes	Yes	Yes
Rate of descent adjustment	Yes	Yes	Yes
Lifting/lowering control	Yes	Yes	Yes
Control to interrupt arm movement	Yes	Yes	Yes
Quick soil entry control	Yes	Yes	Yes
External step by step controls	Yes	Yes	Yes
Wheel slip control	No	Yes	No
Degree of wheel slip display	No	Yes	No

Linkage lift capability at the swivel joints throughout its range: 6550 daN.

HYDRAULIC SYSTEM

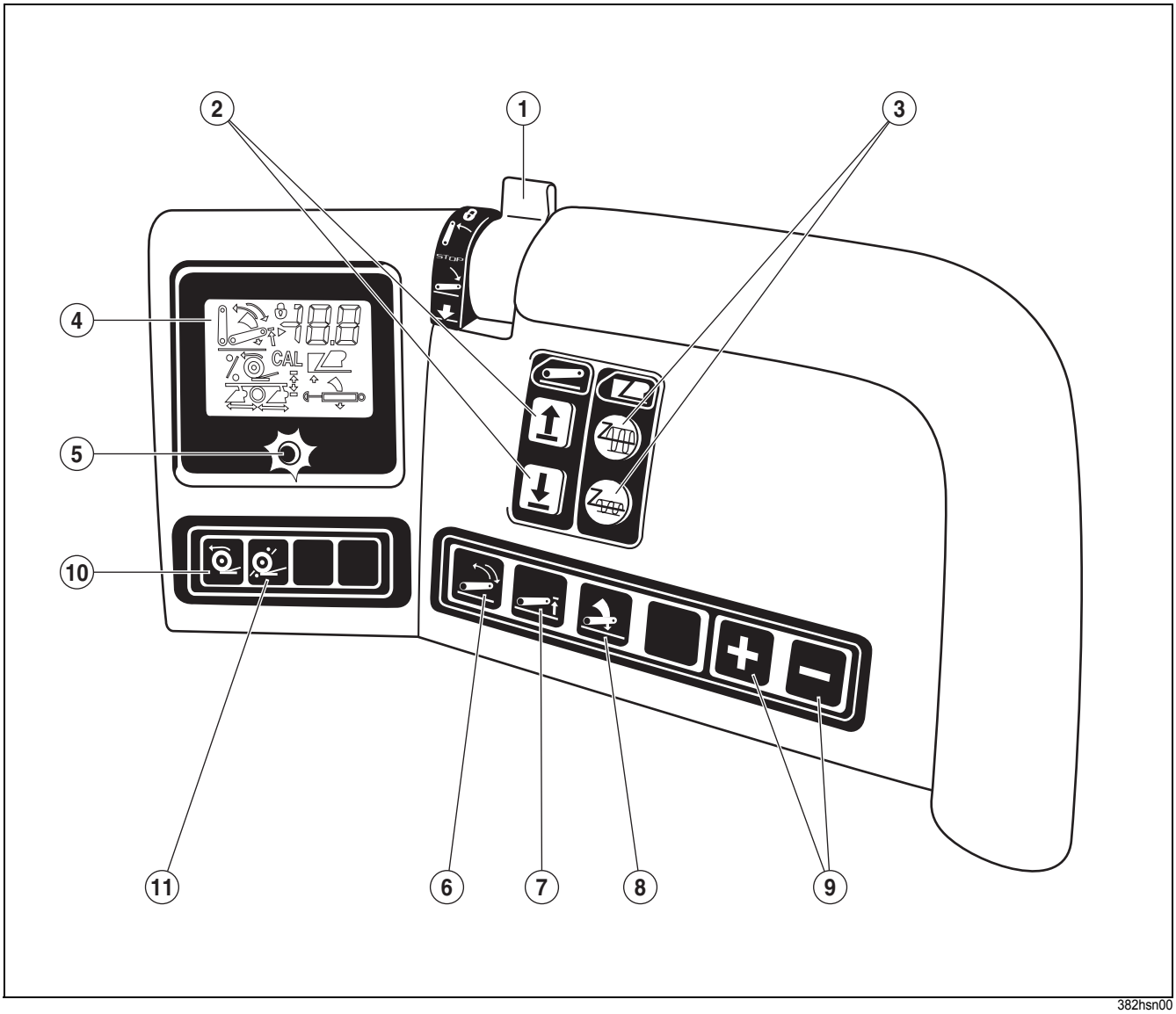
- Closed centre circuit flow LS in l/min: 100 or 110; (Except 546: 100 or 90)
- Open centre circuit flow un l/min: 60;
- Pressure in bar: 200;
- Capacity in litres of the gearbox sump and rear axle: 65;
- Minimum/maximum difference in litres: 8;
- Volume of oil in litres that can be taken for static constraints: 15.

HITCH

Maximum static load	Vertical
Trailer hitch yoke	1800 daN
Hitch stud	2500 daN
Oscillating bar	1700 daN (bar out) 2400 daN (bar retracted)
Picker hook	3000 daN

REAR LINKAGE TCE 15-25 (ELECTRONIC TRACTO CONTROL)

DESCRIPTION OF CONTROL PANEL

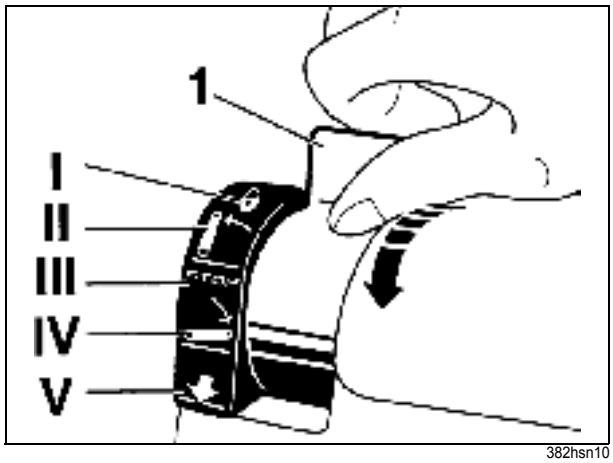


382hsn00

1 - Mode selector.
2 - Position display adjustment keys (working depth adjustment).
3 - Power sensitivity control adjustment keys.
4 - Display.
5 - Control box safety indicator light.
6 - Key to activate transport damping mode.
7 - Key to adjust top limit.
8 - Key to adjust rate of descent.
9 - Adjusting keys "+" (increase) "-" (decrease).
10 - Key to activate wheel slip management*.
11 - Instant wheel slip display key*.

** TCE 25.*

MODE SELECTOR



382hsn10

TRAVELLING POSITION (I)

This mode maintains the linkage in high position, the electronic box preventing any wrong manoeuvres during road transport (red light on). This position also activates the travel damper via the transport damper key.

HIGH POSITION (II)

The linkage is positioned during a manoeuvre on the top limit programmed by the top stop setting keys.

STOP POSITION (III)

This position stops the linkage at any time in its travel (example opposite: position 54).

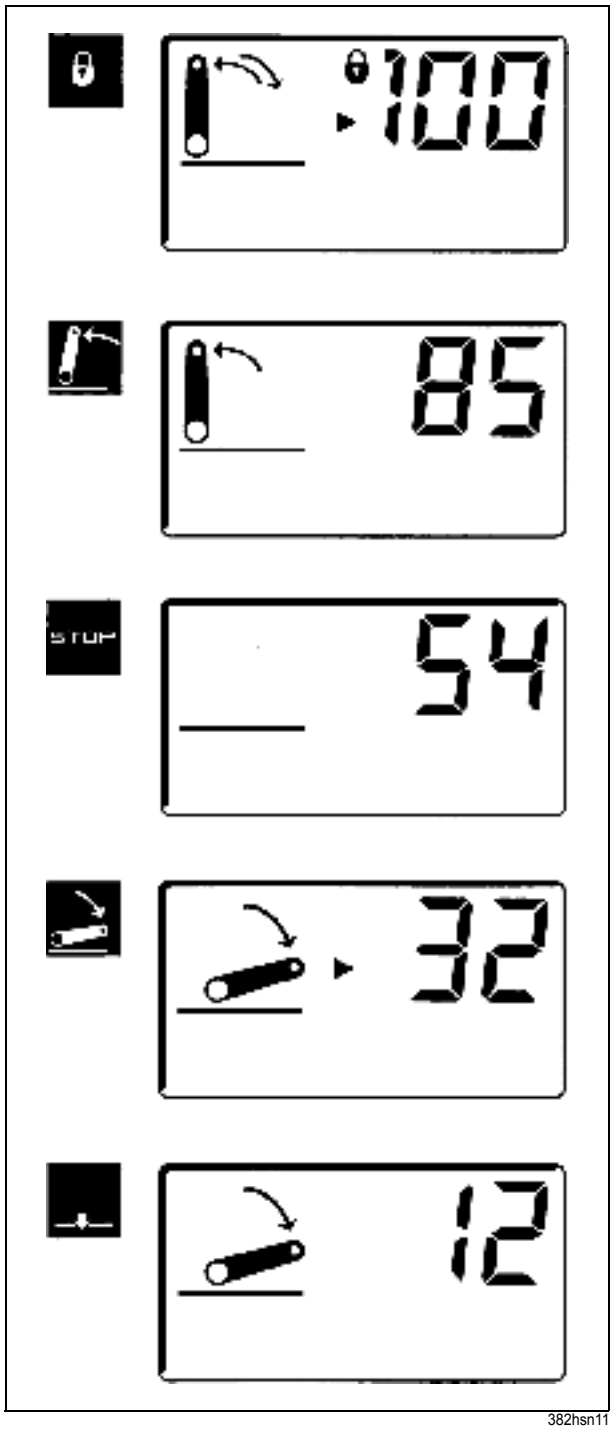
Note: Light upward or downward pressure on selector (1) allows the height of the linkage arms to be precisely adjusted from the STOP position.

WORKING POSITION (IV)

In this position the linkage arms will descend to the position chosen for operating the implement.

FAST SOIL ENTRY POSITION (V)

The mode selector on position (V) gives a faster implement soil entry.



382hsn11

USING THE LINKAGE

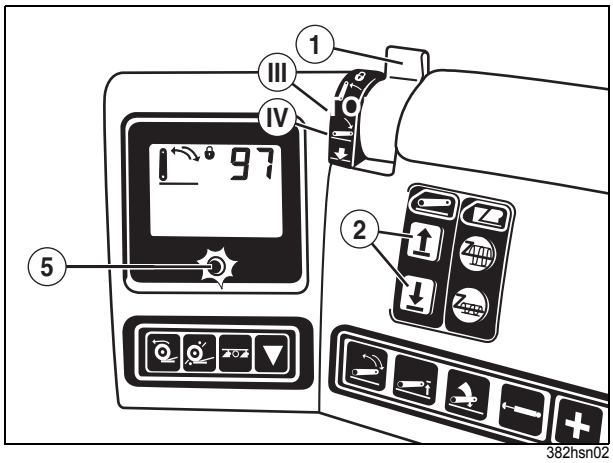
If indicator light (5) is on, proceed as follows:

- Place the mode selector (1) in the working position (IV) ;
- Bring the selector to stop position (III). Wait for 2 seconds.

The light goes out and the linkage is operational.

MALFUNCTIONS

- The warning light (5) flashes slowly: You may continue working. Consult your approved CLAAS agent, an incident is affecting the force or slip controls.
- The warning light (5) flashes rapidly: Stop all activities and call your approved CLAAS repair agent.



382hsn02

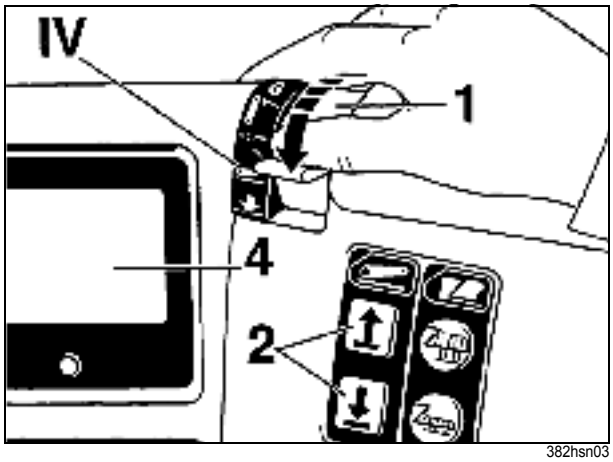
POSITION CONTROL

The position display is adjusted by using the keys (2) after setting the selector (1) to the work position (IV). Press the lower key to lower the linkage arms, the upper key to raise them. The display (4) shows the position of the linkage arms on a scale of 0 to 100.

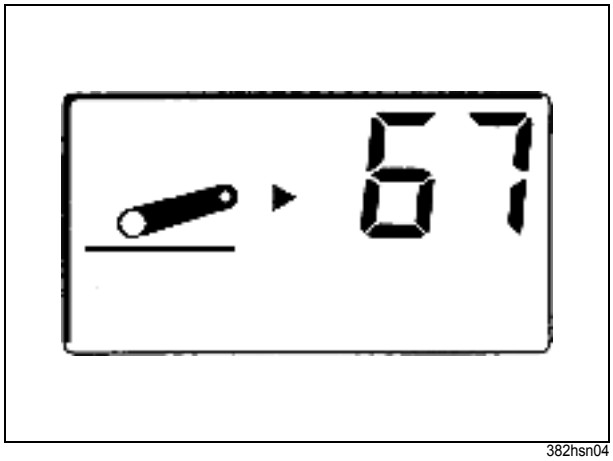
0 = bottom position

100 = top position

Opposite is an example of adjustment: Position 67.



382hsn03



382hsn04

FORCE CONTROL

To activate the force control, proceed as follows:

- Setting the working depth with keys (2).
- Using the keys (3) adjust the required sensitivity: These keys act on the amplitude of the corrections made by the force control.
- As soon as the sensitivity function is used, the adjustment value appears on the screen (4).
- Force control sensitivity is increased by pressing the upper key (3) and decreased by pressing the lower key (3).
- This adjustment works on a scale of 0 to 100 in steps of 10.

Example of sensitivity settings:

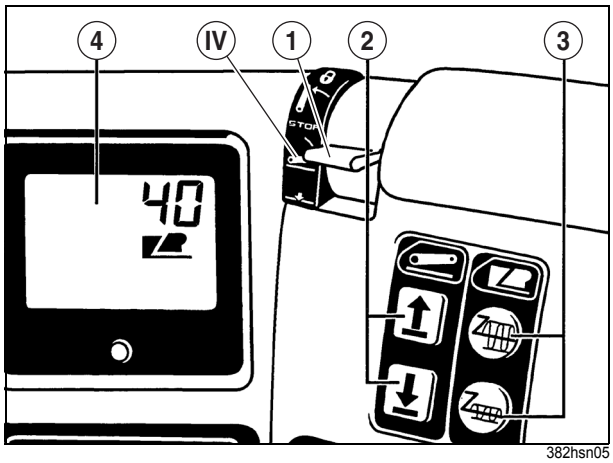
0 = linkage used in position display mode, no variation possible.

10 = linkage used in force control mode, with small variations.

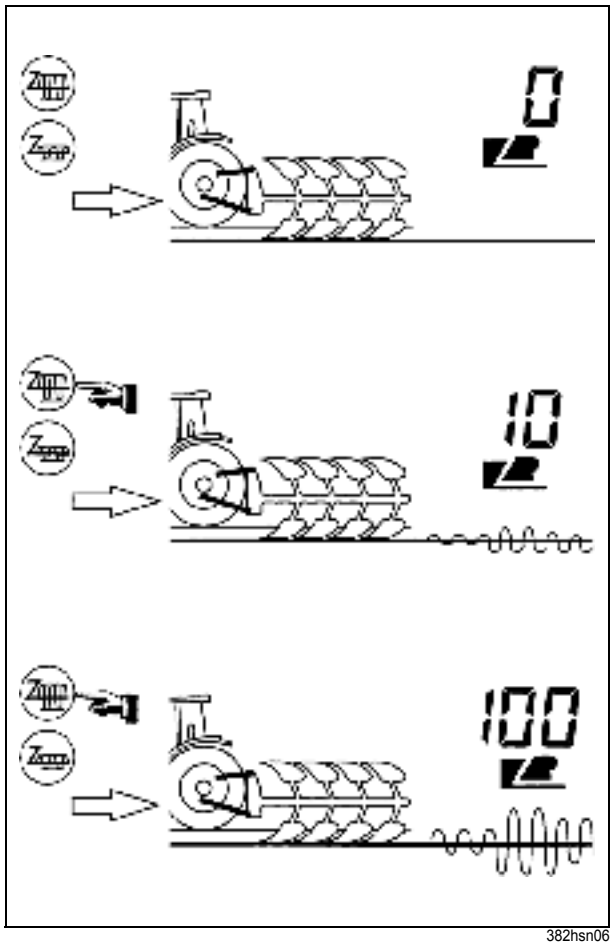
100 = linkage used in force control mode, with large variations.

Note: When adjustment is completed the display automatically returns to position mode.

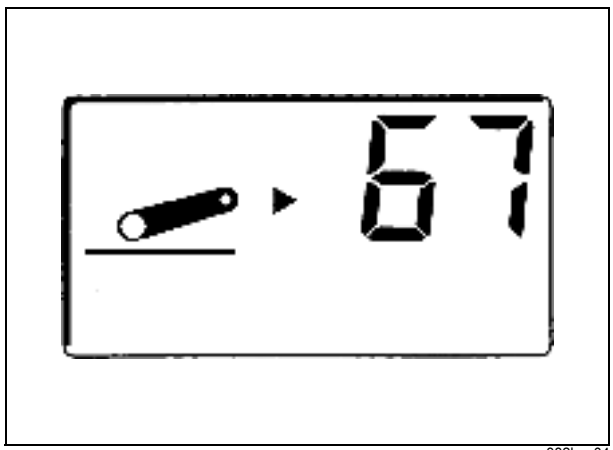
If selector (1) is in the working position (IV), activation of the force control (sensitivity > to 0) is shown on the display by the sign ▶ in front of the depth instruction.



382hsn05



382hsn06



382hsn04

UPPER LIMIT

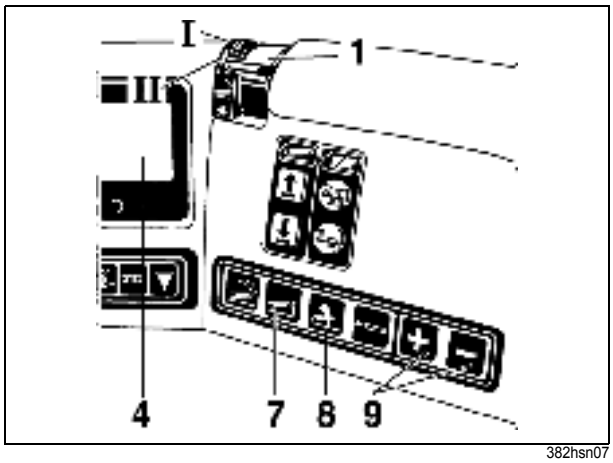
This limits the top part of the linkage travel to prevent large implements touching the cab or while shaft-driven implements are being used.

- Set the mode selector (1) to high position (II).
- Adjustment is by the keys (9) "+" and "- " after requesting the top limit function with key (7).
- As soon as the top limit function is selected (key 7), the adjustment value appears on the display (4) (opposite is an example of adjustment: top limit set at 98).

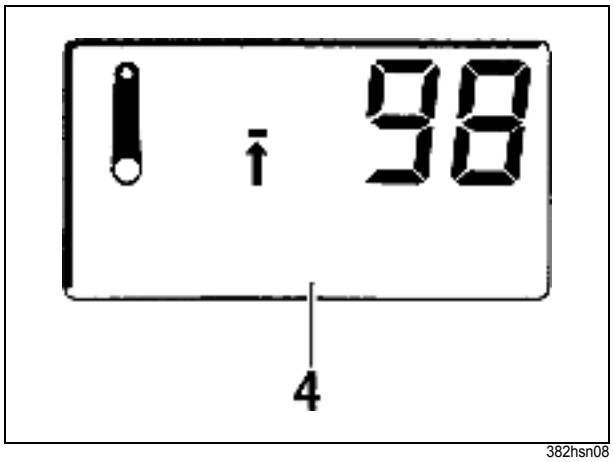
The adjustment operates on the upper part of the linkage travel between points 50 (mid travel) and 100 (max limit) in steps of 1.

Note: When adjustment is completed the display automatically returns to position mode.

Note: The top limit position will never be exceeded by another linkage command (position, force or external controls).



382hsn07



382hsn08

LOWERING SPEED

- Adjustment is possible as long as the mode selector (1) is not in the transport position (I).
- This is adjusted using keys (9) "+" and "-" after requesting the rate of descent function with key (8).
- As soon as the lowering speed function is selected the adjustment value appears on the display (4) (opposite is an example of adjustment: rate of descent set to 80).

Note: If keys (9) are not used the screen returns to position display after 5 seconds.

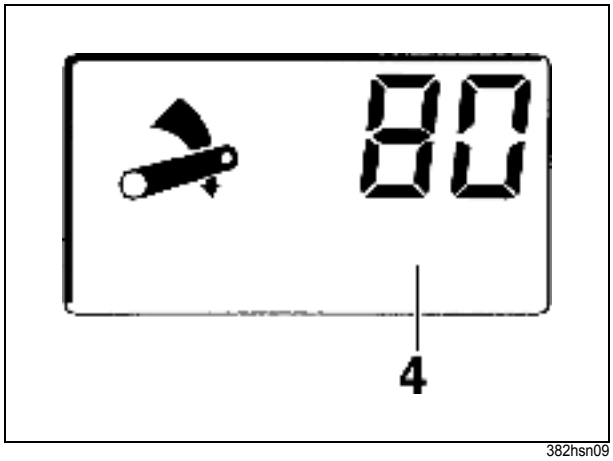
Adjustment is on a scale of 10 to 100 in steps of 10:

10 = slow rate of decent.

100 = fast rate of descent.

Note: When adjustment is finished, press the lowering key (8) to return to position display.

Important: Before any heavy implement is lowered to hard ground, set the lowering speed on value "10".



382hsn09

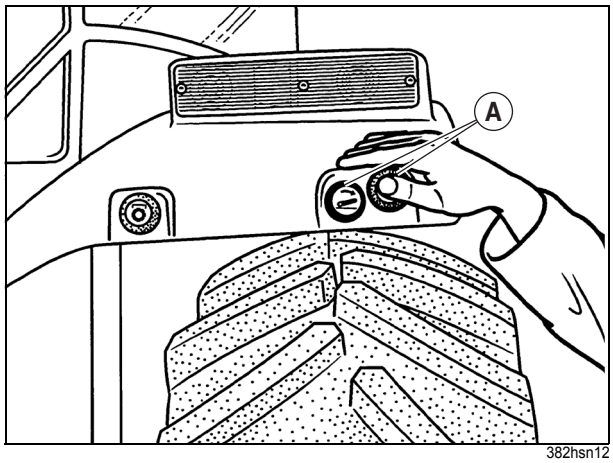
EXTERNAL CONTROL BUTTONS

Positioned on each rear wing, these two push buttons allow the arms to be raised or lowered for implement hitching and adjustment operations.

- When a button is pressed, there is a movement of about 10 cm in the required direction.
- To obtain a greater movement, the control has to be released and pressed again.

Important: Using the external controls puts the box into safety mode. The safety warning light (5) comes on. To unlock this safety measure, refer to the paragraph "Conditions for linkage implementation".

During hitching operations or when using the external linkage control, the operator must remain outside the hitch frame.



382hsn12

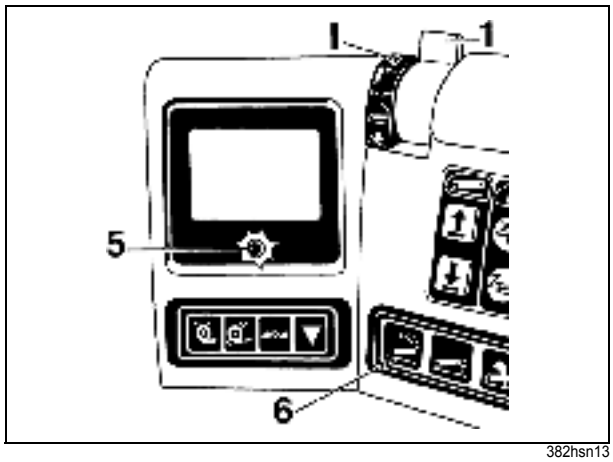
TRANSPORT DAMPER

- To improve driving comfort with heavy implements, the driver can activate the transport damper. All the swinging movements caused by the weight of the rear carried implement are absorbed by the linkage.
- To obtain the damper function, adjust the selector (1) on the high position (I) and press key (6). Warning light (5) comes on.
- To deactivate the damper function press key (6).

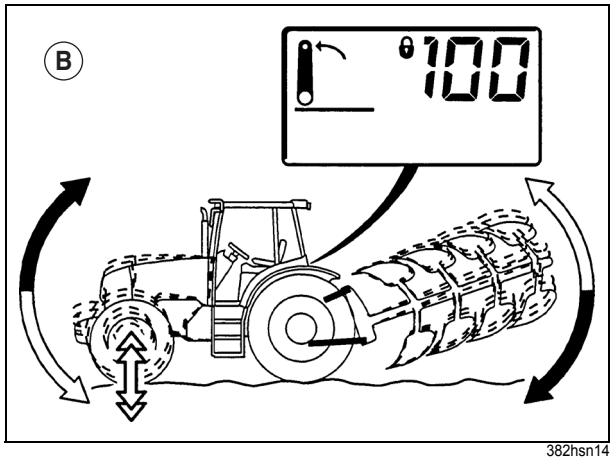
Without the damper (B).

With the damper (C).

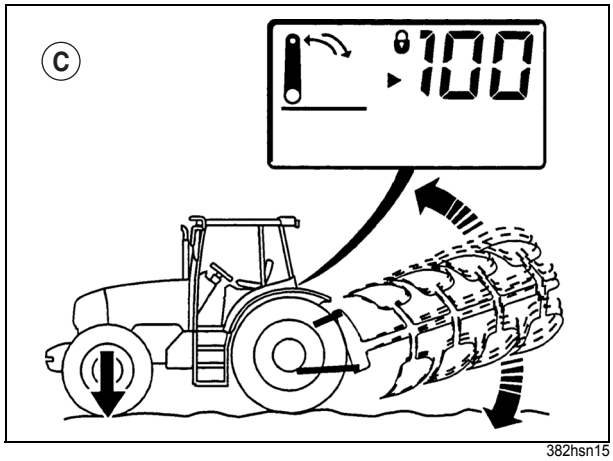
Activate this function when on the road to maintain good front wheel grip and keep good steering efficiency.



382hsn13



382hsn14



382hsn15

ACTIVE SLIP MANAGEMENT (TCE 25)

ACTIVE WHEEL SLIP MANAGEMENT DISPLAY

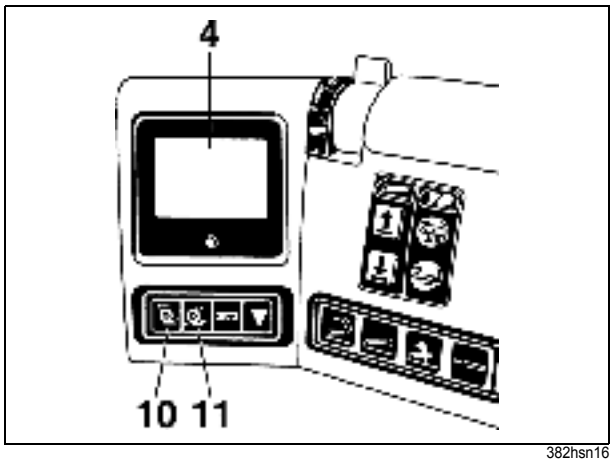
- Press key 10 for active wheel slip management.
- As soon as the function is selected, the corresponding symbol  appears on display (4).
- The Electronic Tracto Control will automatically measure the average wheel slip and set the wheel slip limit itself. If the average permitted wheel slip value is ever exceeded, the linkage is immediately raised so that the tractor can cross the wet area and avoid becoming bogged down.

Note: The load transfer caused by lifting the implement allows the tractor to find the necessary grip to get itself out when bogged down. However, if wheel slip rate is above 65%, the implement is immediately lifted clear to avoid all risk of getting bogged down.

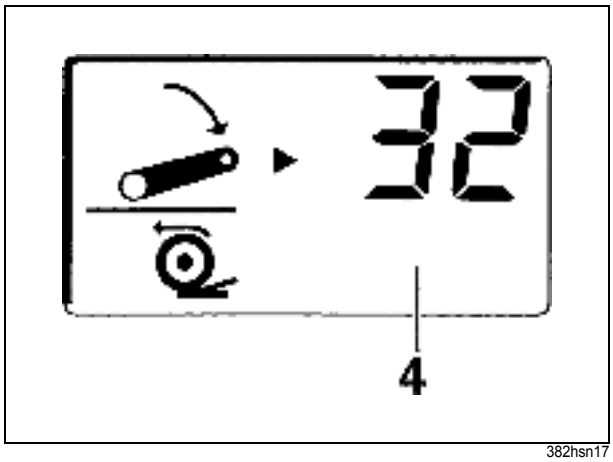
An arrow appears above the symbol  each time the wheel slip management operates (when the average permitted wheel slip value is exceeded).

SNAPSHOT DISPLAY OF RATE OF WHEEL SLIP

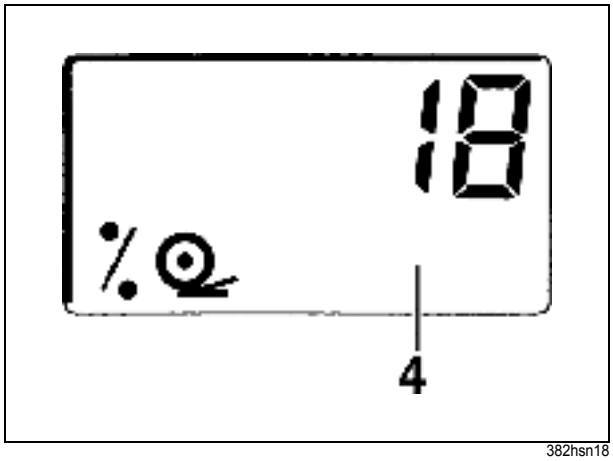
- A snapshot of the rate of wheel slip appears on screen (4) when key (11) is pressed. As soon as the function is selected, the symbol  appears.
- To return to position display, press key (11) again.



382hsn16



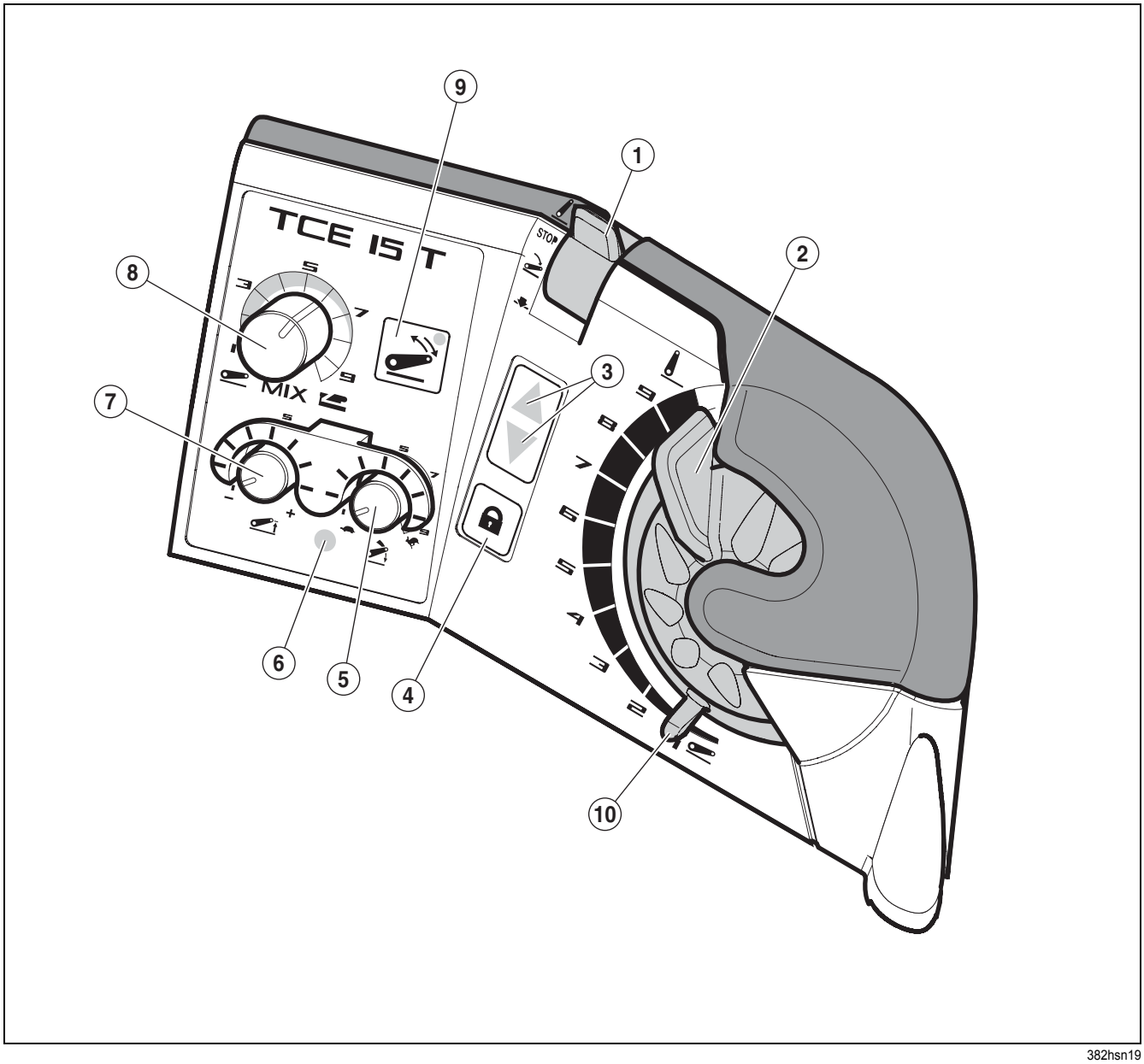
382hsn17



382hsn18

REAR LINKAGE TCE 15 T (ELECTRONIC TRACTO CONTROL)

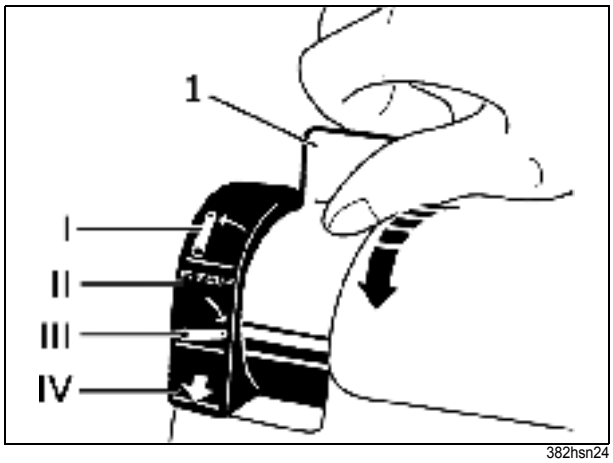
DESCRIPTION OF CONTROL PANEL



382hsn19

1 - Mode selector.
2 - Position adjustment control (work depth adjustment).
3 - Linkage motion indicator lights (up - down).
4 - Transport lock button.
5 - Descent speed adjuster.
6 - Control box safety indicator light.
7 - Upper limit adjuster.
8 - Effort/position control sensitivity adjustment button.
9 - Key to activate transport damping mode.
10 - Mechanical stop identifying the "low limit" position.

MODE SELECTOR



382hsn24

HIGH POSITION (I)

The linkage is positioned during a manoeuvre on the top limit programmed by the adjustment button (7).

STOP POSITION (II)

This position stops the linkage at any time in its travel.

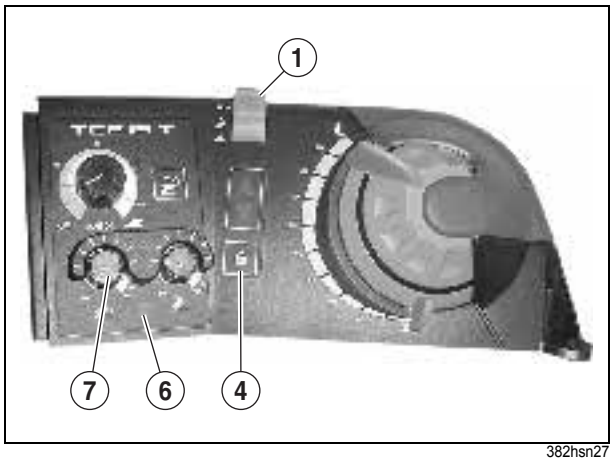
Note: Light upward or downward pressure on selector (1) allows the height of the linkage arms to be precisely adjusted from the STOP position.

WORKING POSITION (III)

In this position the linkage arms will descend to the position chosen for operating the implement.

FAST SOIL ENTRY POSITION (IV)

The mode selector on position (IV) gives a faster implement soil entry.



382hsn27

TRAVELLING POSITION

This mode maintains the linkage in high position, the electronic box preventing any wrong manoeuvres during road transport (red light (6) on). This active position also activates the travel damper.

To activate the travelling position:

- Set the selector (1) to top limit (I).
- Press the key (4). The safety warning light (6) comes on.
- To de-activate the travelling position, press once more the key (4). Then perform the "linkage initiation procedure" to make it operational.

USING THE LINKAGE

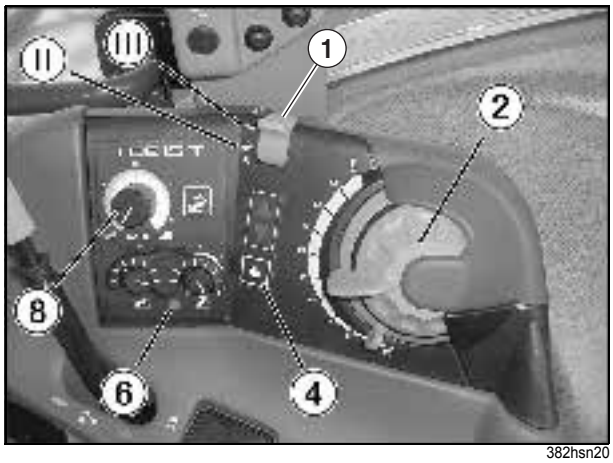
If indicator light (6) is on, proceed as follows:

- Cancel force control by turning adjustment knob (8) to the left.
- Bring the memory button (1) to stop position (III), then to work position (II).
- Identify the actual position of the arms, using the position/depth adjustment control (2) until the safety indicator light goes off.

The light goes out and the linkage is operational.

MALFUNCTIONS

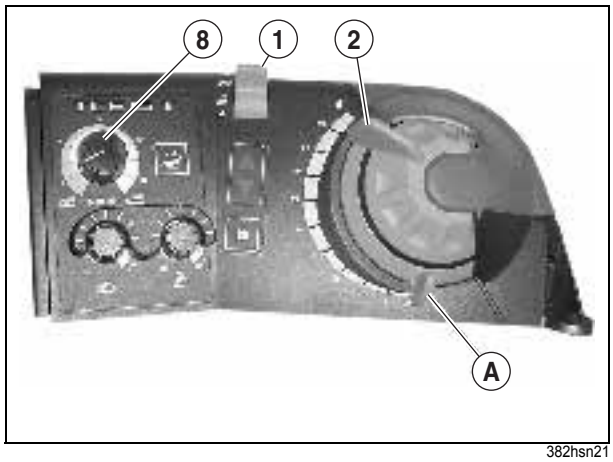
Flashing: The rate of flashing identifies the type of fault. Some linkage functions remain operational. Refer to your approved CLAAS repair agent.



382hsn20

POSITION CONTROL

- Set selector (1) on the working position .
- Turn button (2) to the right (clockwise) to raise the linkage.
- Turn button (2) to the left (counter-clockwise) to lower the linkage.
- Each position of the button corresponds to a position of the lifting arms.
- The mechanical stop (A) is used as an indication when the position of knob (2) has been changed during work.



382hsn21

FORCE CONTROL

To activate the force control, proceed as follows:

- Place selector (1) in working position .
- Adjust the tool working depth with button (2) (see position control).
- Adjust the force control sensitivity using button (8): This button alters the range of the linkage.

To increase the force control sensitivity, turn button (8) clockwise and to decrease, turn the button (8) counter-clockwise.

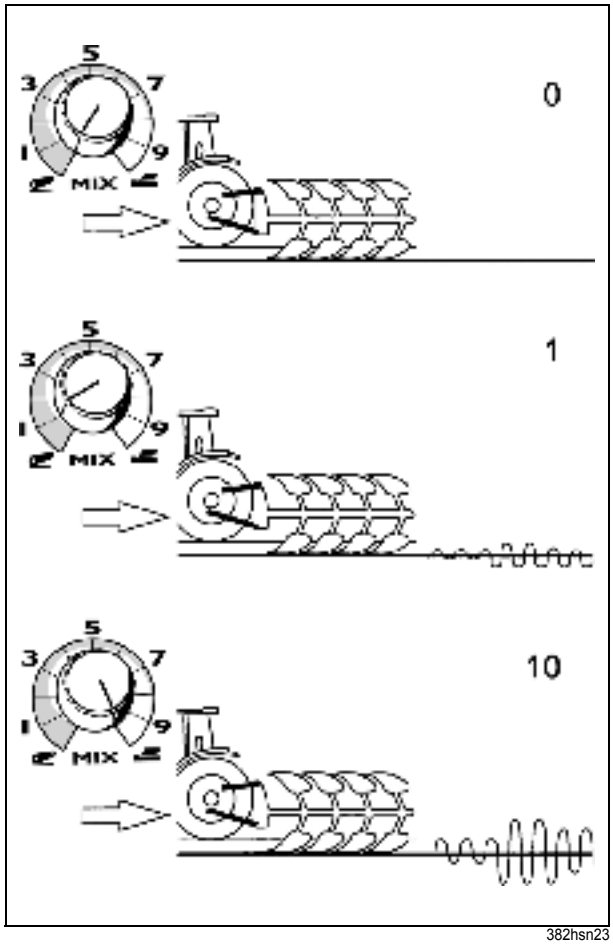
- This adjustment works over a scale from 0 to 10.

Example of sensitivity settings:

0 = linkage used in position display mode, no variation possible ;

1 = linkage used in force control mode, with small variations ;

10 = linkage used in force control mode, with large variations.



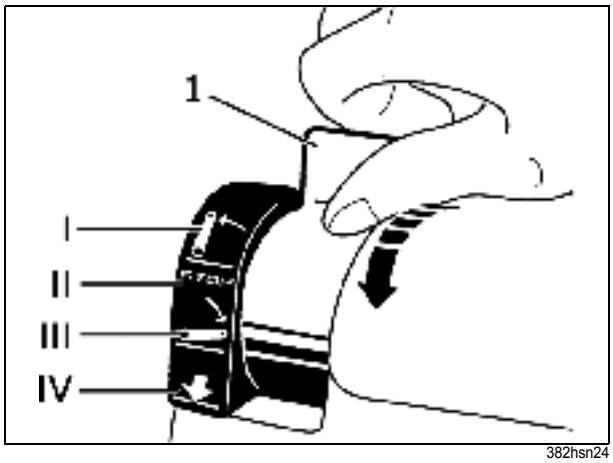
382hsn23

UPPER LIMIT

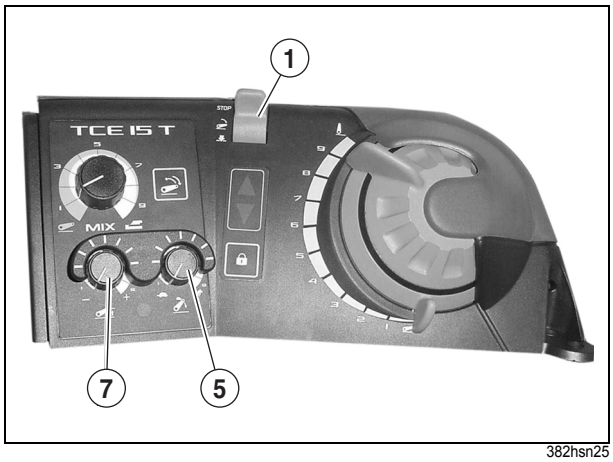
This limits the top part of the linkage travel to prevent large implements touching the cab or while shaft-driven implements are being used.

- Place top stop button (7) in minimum position towards marker –.
- Set the mode selector (1) to high position (I).
- Then adjust the top position as required, using button (7).
- Turning the button to the right (clockwise) will increase the height of the linkage arms at top limit.
- Turning the button to the left (counterclockwise) will decrease the height of the linkage arms at top limit.
- Adjustment is to be carried out at the top section of linkage travel.

Note: The top limit position will never be exceeded by another linkage command (position, force or external controls).



382hsn24



382hsn25

LOWERING SPEED

1 - Set the selector (1) to high position (II).

2 - Using button (5), select the minimum lowering speed.

3 - Set the selector (1) to low position  .

Repeat operations 1 to 3 and modify the lowering speed using button (5):

- Turning to the right (clockwise) increases linkage arm descent rate.
- Turning the button to the left (counterclockwise) will decrease the height of the linkage arms.

Important: Before lowering any heavy implement to a hard surface, set button (5) on the tortoise position.

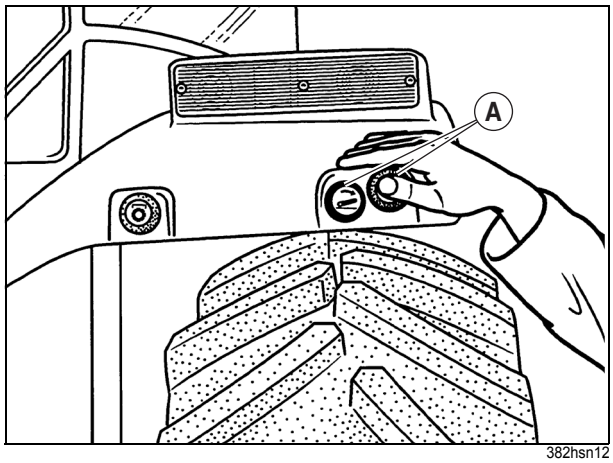
EXTERNAL CONTROL BUTTONS

Located on each rear wing, the 2 push buttons (A) raise or lower the arms for hitching manoeuvres and implement adjustment.

- When a button is pressed, there is a movement of about 10 cm in the required direction.
- To obtain a greater movement, the control has to be released and pressed again.

Important: Using the external controls puts the box into safety mode. The safety warning light (6) comes on. To unlock this safety measure, refer to the paragraph "Conditions for linkage implementation".

During hitching operations or when using the external linkage control, the operator must remain outside the hitch frame.



382hsn12

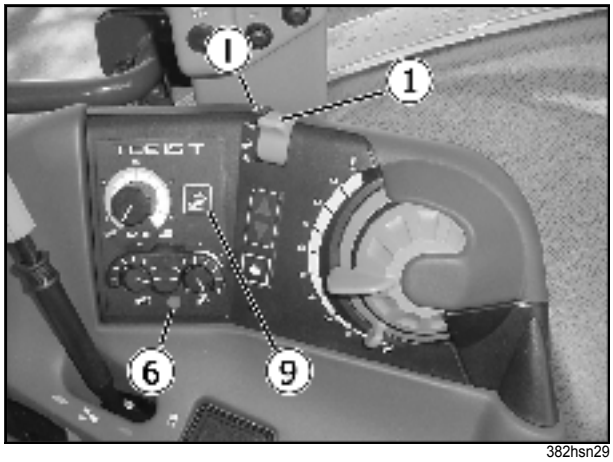
TRANSPORT DAMPER

- To improve driving comfort with heavy implements, the driver can activate the transport damper. All the swinging movements caused by the weight of the rear carried implement are absorbed by the linkage.
- To obtain the damper function, adjust the selector (1) on the high position (I) and press key (9). The warning light of key (9) comes on.
- To deactivate the damper function press key (9).

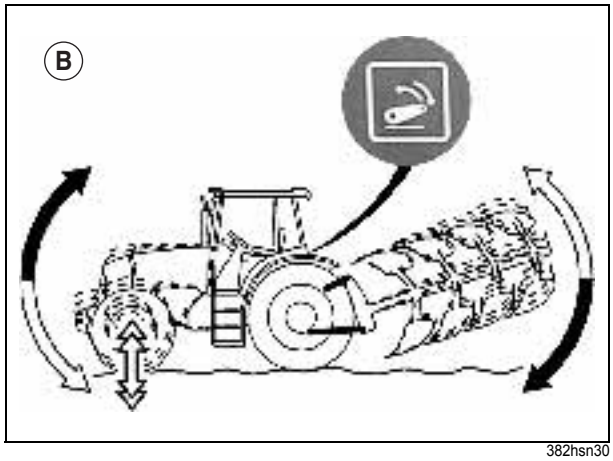
Without the damper (B).

With the damper (C).

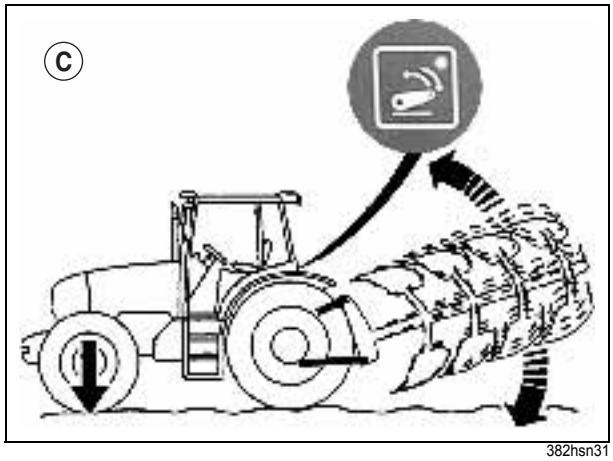
Activate this function when on the road to maintain good front wheel grip and keep good steering efficiency.



382hsn29



382hsn30



382hsn31

AUXILIARY SPOOL VALVES

Matching power take-offs with indications:

Indication 1 for power-take-offs (1).

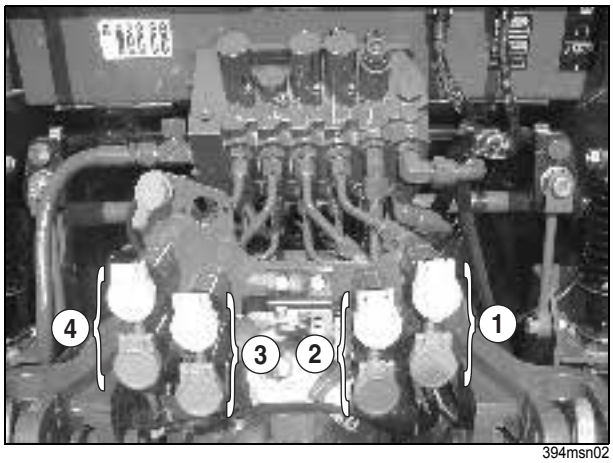
Indication 2 for power-take-offs (2).

Indication 3 for power-take-offs (3).

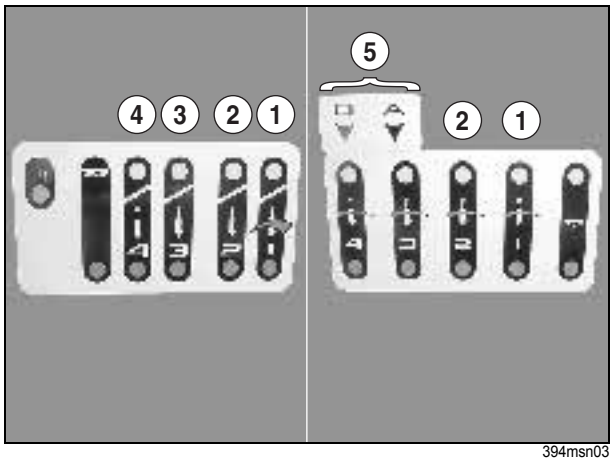
Indication 4 for power-take-offs (4).

Indication 5 for power take-offs (5), (A) and (B).

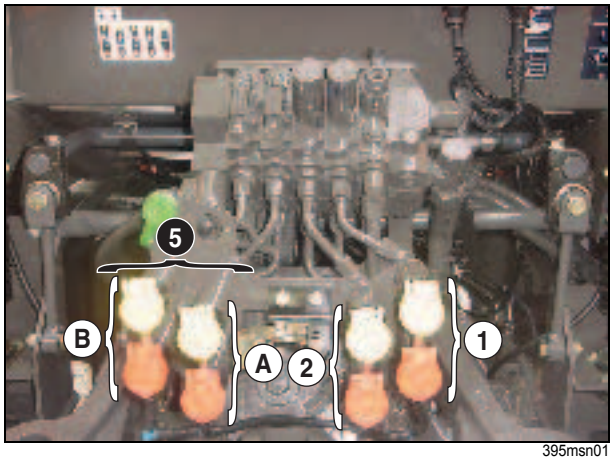
Note: Power take-off (5A) or (3) and (5B) or (4) are mounted in parallel with power take-offs (5A) and (5B), at the front of the tractor. These side connectors function with the electropilot or the cross lever.



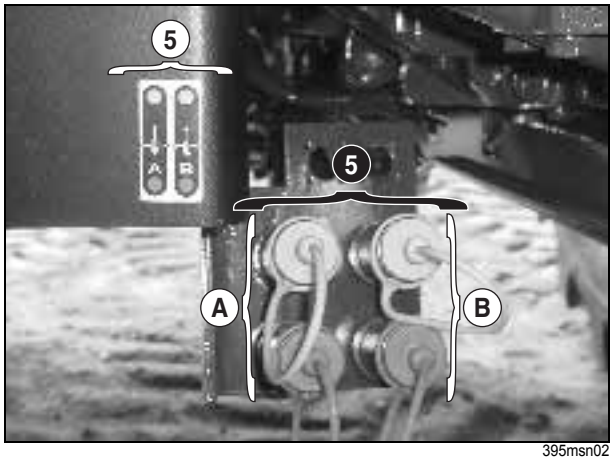
394msn02



394msn03



395msn01



395msn02

DUAL EFFECT SPOOL VALVE 1 AND 2

Connection: On the power take-offs (1) and (2).

Positions of lever (1)*		Power take-offs
Position (A)	Power supply	Pressure (red)
Position (B)	Neutral	
Position (C)	Power supply	Pressure (yellow)
Position (D)	Floating	

** Same functioning for lever (2).*

- Feed is progressive between positions (A), (B) and (C) of the lever.
- The lever is maintained in position (A) and (C) by hydraulic locking.

Note: Unlocking by pressure: You do not have to keep holding the spool valve control to fully extend or withdraw a ram. This remains in up or down position, once the ram is fully extended, the increased pressure in the circuit returns the spool valve to neutral.

In the floating position (D), the pressure take-offs communicate with the tank, which allows the hitched implement to follow the undulations of the land. This position is fitted with a lock.

Note: The sleeves (M) immobilise control levers is position (A), (B) or (C).

On road, or when the control levers are not used, lock these levers in neutral position using the sleeves (M).

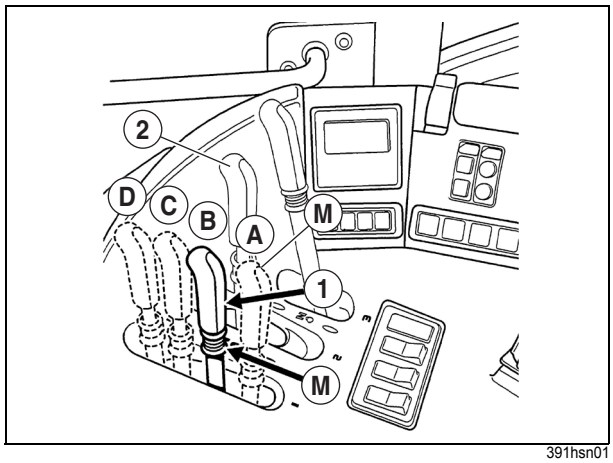
DUAL EFFECT SPOOL VALVE 3

Connection: To pressure connectors (3).

Feed is progressive between positions (A), (B) and (C) of the lever.

Hold the control lever during the whole operation.

Lever positions		Power take-offs
Position (A)	Power supply	Pressure (red)
Position (B)	Neutral	
Position (C)	Power supply	Pressure (yellow)



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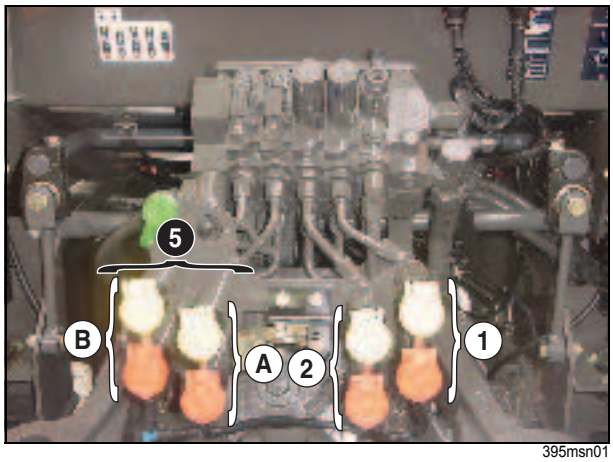

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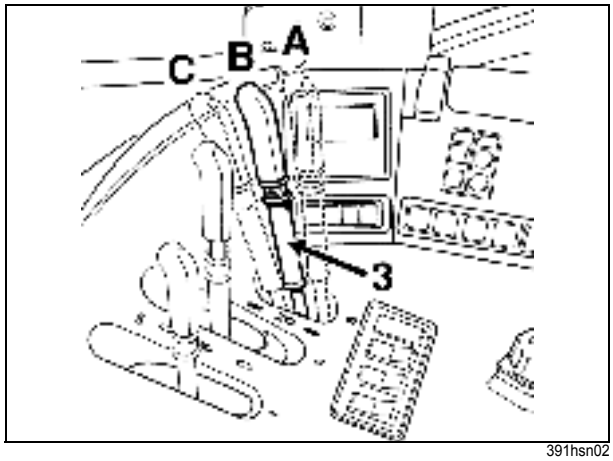

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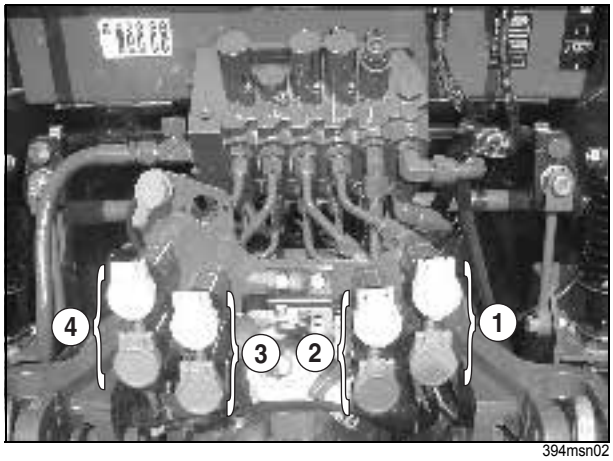


394msn02

DUAL EFFECT SPOOL VALVE 4

Connection: On power take-offs (4) when lever (4) functions only in line.

Connection: On power take-offs (3) or (5A) and (4) or (5B) when lever (4) functions in cross.

Lever positions		Power take-offs
Position (D)	Power supply	Pressure (red)
Position (E)	Neutral	
Position (F)	Power supply	Pressure (yellow)
Position (G)	Floating	

When lever (4) functions in cross, positions (D), (E) and (F) are also operational from left to right.

Lever (2) located to the right of the control lever locks the lever in neutral (E):

- Control lever locked (I).
- Control lever locked laterally, functioning of lever in line (II).
- Control lever fully unlocked (III) *.

Feed is progressive between positions (D), (E) and (F) of the lever.

In the floating position (G), the pressure take-offs communicate with the tank, which allows the hitched implement to follow the undulations of the land.

It is possible to adapt impulse buttons on the knob of lever (4) to control a bail elevator. Contact your approved CLAAS repairer.

OIL RETURN

Plug (C) communicates with the transmission and allows oil return in the event of continuous use of a spool valve (hydraulic engine or additional spool valves).

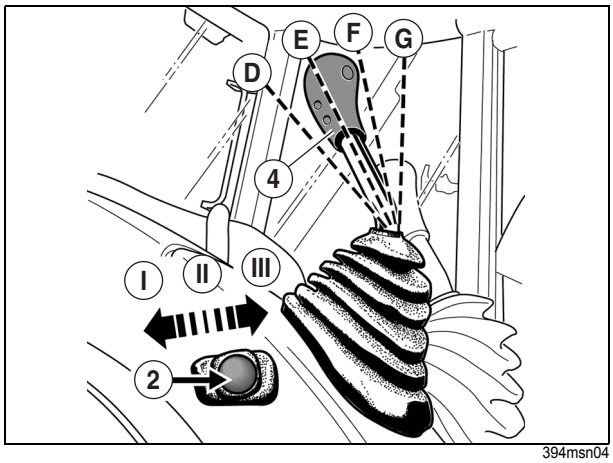
1 - Open centre circuit.

2 - Closed centre circuit (LS).

FLOW ADJUSTMENTS

Flow adjustment of 5 to 100 % is obtained using controls (D).

- To rduce the flow, turn the control clockwise.
- To increase the flow, turn the control anti-clockwise.



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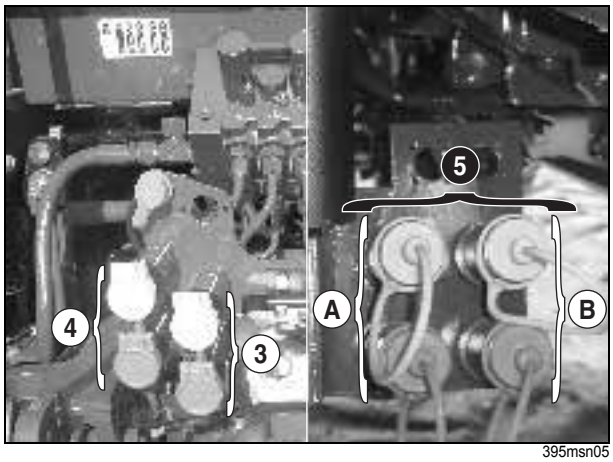

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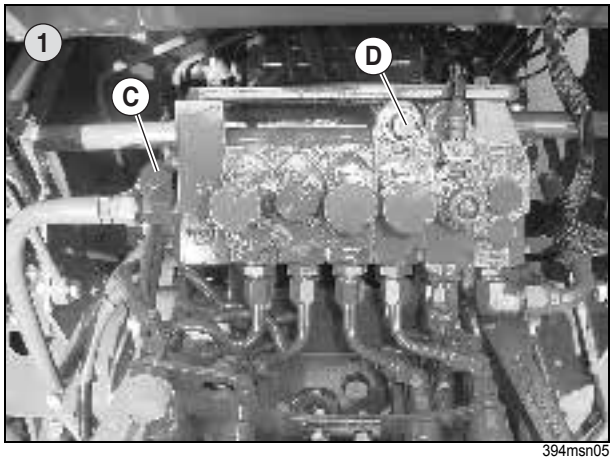

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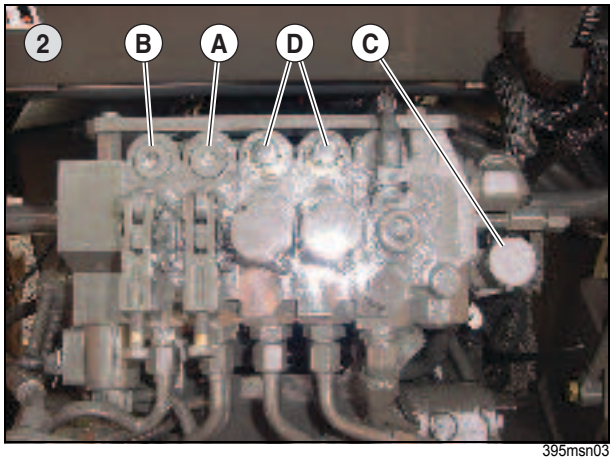


395msn03

** No position (III) on the on line controls.*

ELECTROPILOT

ACTIVATION

When the tractor is started, the Electropilot is systematically de-activated.

ACTIVATION METHOD

- Set the button (5) to "stop".
- Press button (1) to make the system operational. Indicator light (2) indicates the system state.

> ***When the Electropilot is not in use (on the road, etc.), set the button (1) to "OFF" (indicator light (2) off).***

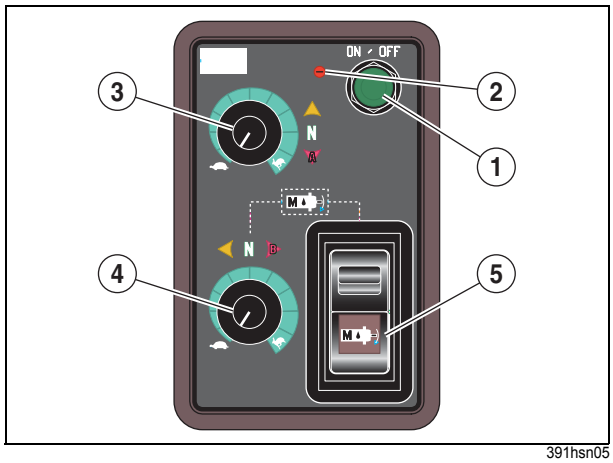
SAFETY WARNING LIGHT (2)

- Steady "on": The system is operational.
- Light flashes slowly: The system indicates a fault but operation is still possible. Refer to your approved CLAAS repair agent.
- Rapid flashing: Fault causing inhibition of the system. Stop all activities and call your approved CLAAS repair agent.
- Out: The system is de-activated.

JOYSTICK OPERATION

The joystick allows activating two spool valves simultaneously (or independently).

- The electro spool valve (A) is controlled by moving the lever on the longitudinal axis "y".
- The electro spool valve (B) is controlled by moving the lever on the lateral axis "x".



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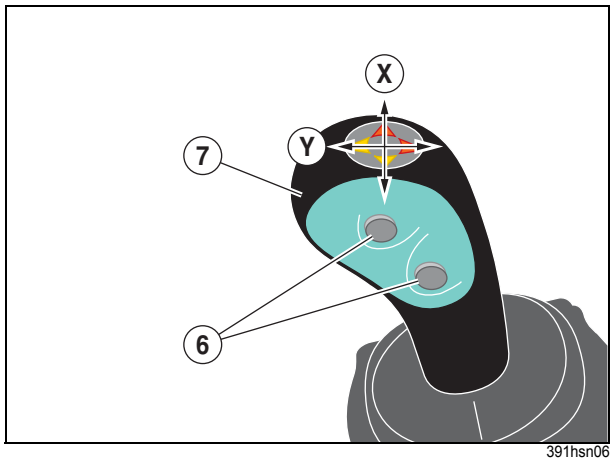
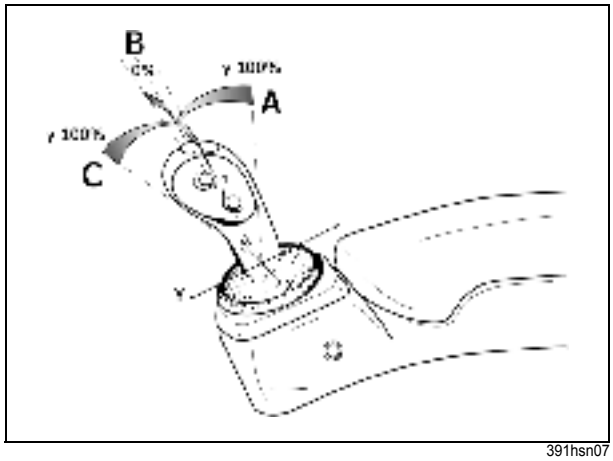


391hsn06



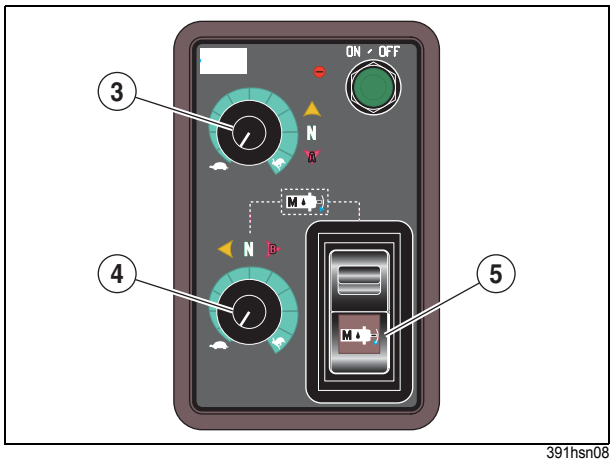
391hsn07

FLOATING POSITION

The two spool valves controlled by the Electropilot have a floating position.

- Electro spool valve (A) ("y" axis):
  - Push the joystick fully forward (beyond the "tight point") and press the button (7).
  - Release both controls. Spool valve No 5A is in floating position.
- Electro spool valve (B) ("x" axis):
  - Push the joystick fully to the right (beyond the "tight point") and press the button (7).
  - Release both controls. Spool valve No 5B is in floating position.

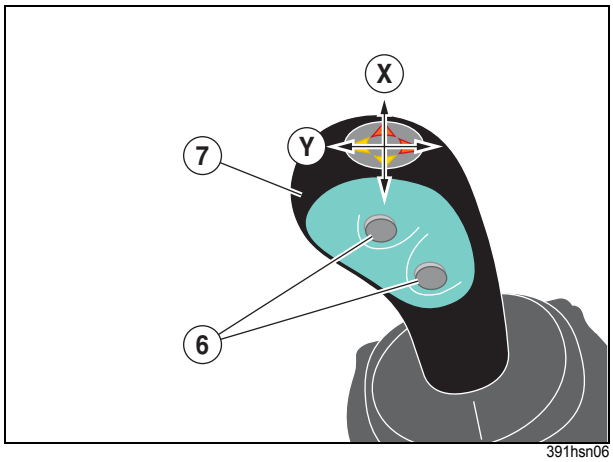
Any displacement along the "x" or "y" axis will de-activate the floating position on the corresponding axis.



391hsn08

ADDITIONAL FUNCTION

The impulse buttons (6) located on the knob of lever (1) are used to control a bale elevator or other functions. To make the other functions operational, call your approved CLAAS repair agent.



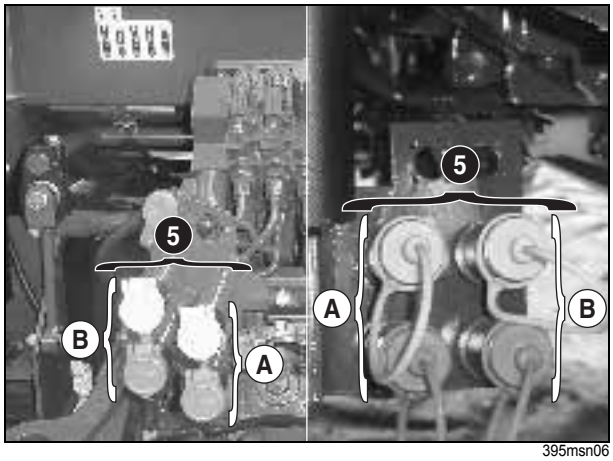
391hsn06

FLOW ADJUSTMENTS

Adjustment is made in the range from 5 to 100% of the available flow. The flow on the electro spool valve (A) is adjusted with the potentiometer (3). The flow on the electro spool valve (B) is adjusted with the potentiometer (4).

Note: When connecting new implements, make preliminary tests with a minimum flow setting (buttons (3) and (4) to a stop, counterclockwise).

- To decrease the flow, turn the potentiometer to the left (counterclockwise).
- To increase the flow, turn the potentiometer to the right (clockwise).



395msn06

CONTINUOUS FEED

This function is available on the electro spool valve (B).

OPERATION

Activate the floating position (see "floating position" in the "joystick operation" section).

Important: The floating position is intended to avoid pressure surges in the hydraulic circuit. This protects the tractor and implements from mechanical stresses. It is essential, especially for high inertia engines.

- Set the flow limiter (4) to minimum position (fully counterclockwise).
- Set the switch (5) to position (2). Hold the lock (a) down when manoeuvring the switch, and indicator light (b) comes on.
- Adjust the flow to the value required for correct operation of the implement.

TURNING OFF THE CONTINUOUS FEED

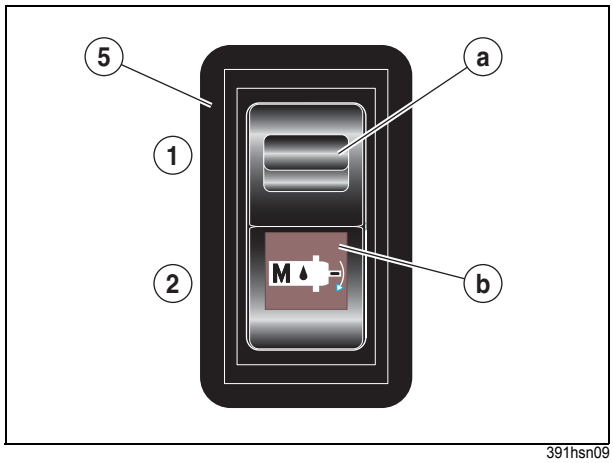
To stop continuous feed, set switch (5) to position (1).

Note: When flashing, indicator light (b) indicates a system fault. Refer to your approved CLAAS repair agent.

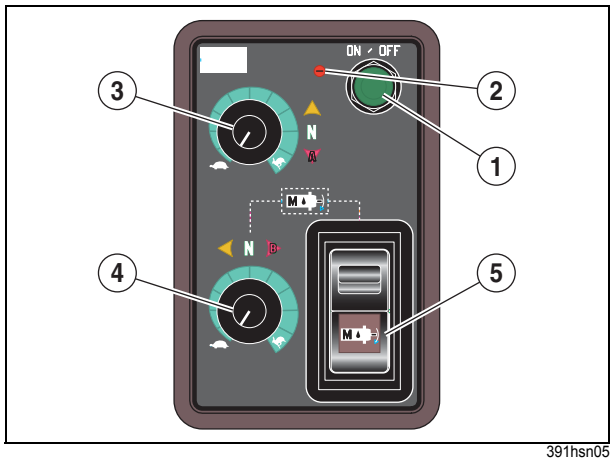
STOPPING THE ELECTROPILOT SYSTEM

To stop the electropilot, press button (1). Light (2) goes out.

Important: Never press button (1) if switch (5) is in continuous supply position: Risk of system fault.



391hsn09



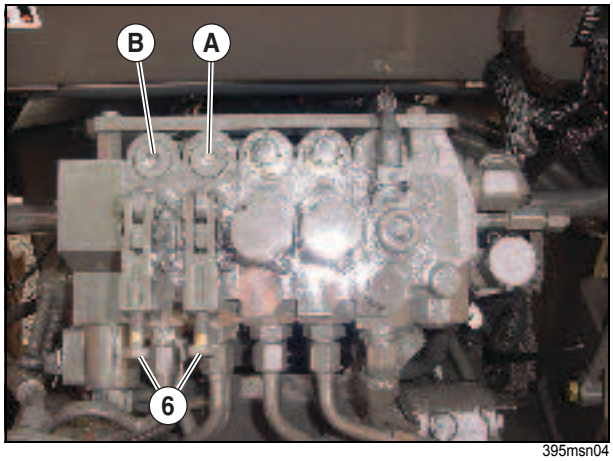
391hsn05

CONTROLS IN THE EVENT OF BREAKDOWNS

The Electropilot system includes manual controls (6) for moving an implement in the event of electrical system failure. Activate control (6) of the spool valve concerned.

- An upward action supplies the red pressure take-off. The yellow pressure take-off is then in return.
- Adownward action supplies the yellow pressure take-off. The red pressure take-off is then in return.

The use of the manual controls should be exceptional when the joystick is non-operational. This actuation must be carried out inside the cab, making sure there is nobody near the implement.



395msn04

REAR HITCH ADJUSTMENT INSTRUCTIONS

INFLUENCE OF HITCH GEOMETRY ON LINKAGE CAPACITY

The 3 point hitch allows the largest number of different implements to be hitched. You must identify the most appropriate hitch geometry for each application. To achieve this the following components can be adjusted:

A - Top link (upper link attachment point with respect to the centre line of the wheels and the length of the link).

B - Lower links (lower link attachment points).

C - Linkage rods (length of linkage rods).

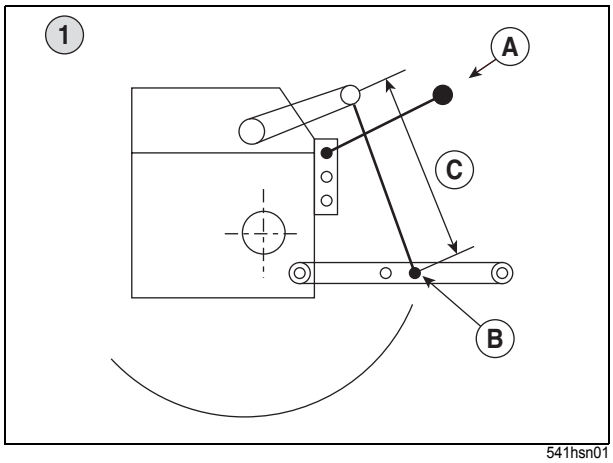
If you want maximum lift capacity (heavy tool), you must get close to the configuration corresponding to the maximum mechanical advantage (1).

If the load to be lifted is not very heavy, this is an example of a linkage configuration which corres-ponds to minimum mechanical advantage (2).

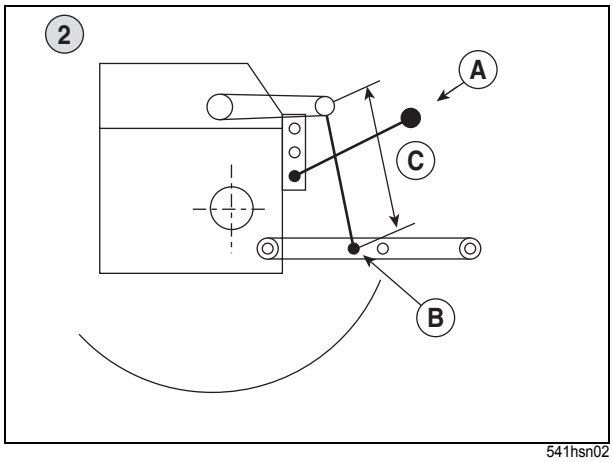
ADJUSTING LINKAGE RODS

- To increase the lift height, shorten the linkage rods.
- To obtain greater working depth, lengthen the linkage arms.
- To obtain a sideways position of the implement, adjust the rods to right or left.
- All adjustments are carried out using the handles (1).
- Depending on the position of the centre line (2) there is:
- In (F) a high position of the lower links.
- At (G) a bottom position for the lower links.
- In (H) a floating position of the lower bars.

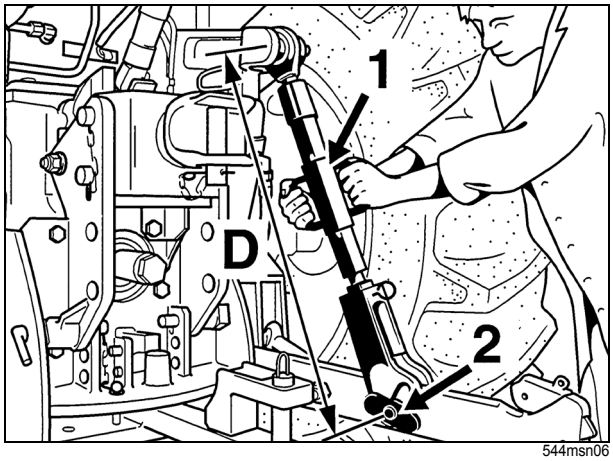
When the adjustments are complete, lock the handles (1) downwards. During adjustment you must check that the distance between the centre lines of the linkage rods (D) does not exceed 820 mm.



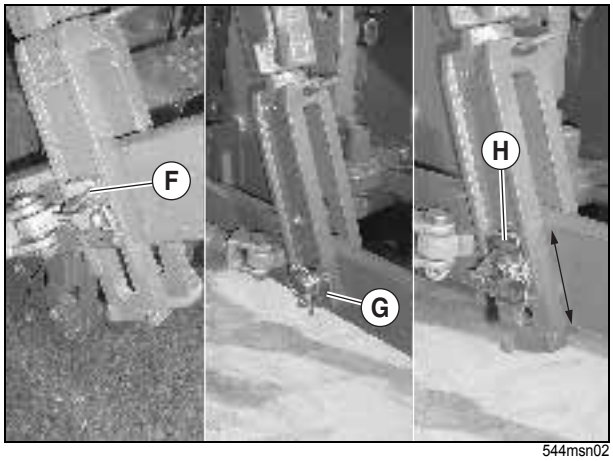
541hsn01



541hsn02



544msn06



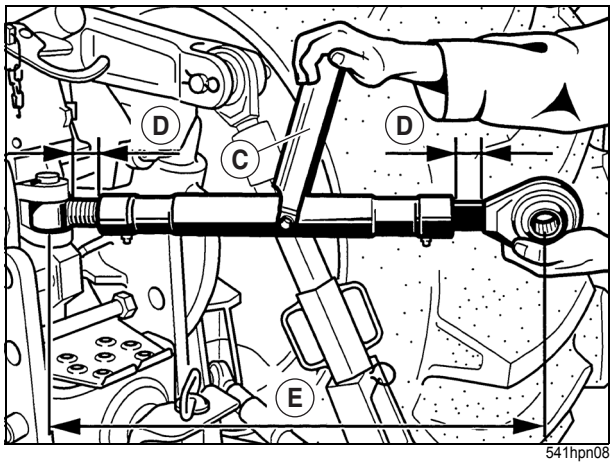
544msn02

TOP LINKAGE ADJUSTMENT

- Hold the upper end of the rod.
- Lift the adjusting handle (C) and turn the central body to adjust the length of the link.

Check that the uncovered threaded lengths (D) are equal (maximum distance 5 mm). The centre-line distance (E) must not exceed 770 mm.

When adjustment is finished, fold the adjusting handle (C) onto the central body and fit the link to the implement's arm.



541hpn08

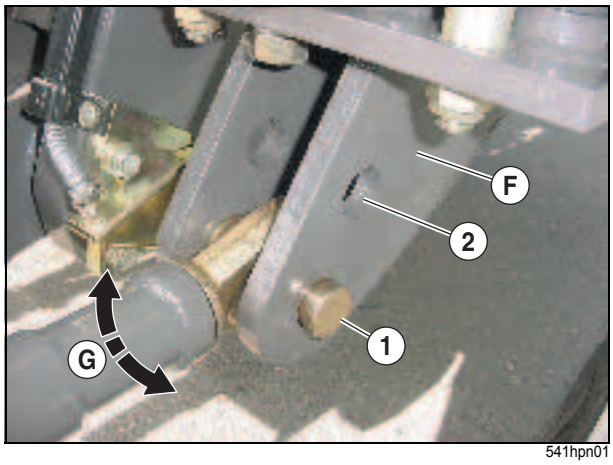
ADJUSTING THE STABILISERS

The stabilisers are used to limit the sideways movement of the lower hitch bars.

Depending on the position of the stabiliser in the mounting (F) there is:

- In position (1), constant control of lateral movement over the complete vertical travel of the lower links ;
- In position (2), defined lateral movement when the lower links are in the low position and automatic locking in the high position.

Important: Incorrect adjustment of position (2) may damage the stabilisers and the flared housings at the upper linkage position.



541hpn01

ADJUSTMENTS

When the correct position has been found to suit the implement being used, the stabilisers must be adjusted as follows:

- Position (1): Tighten or loosen the central part (G) to obtain the required movement on the right or left-hand side ;
- Position (2): Tighten or loosen the central part (G) to obtain minimum movement in the linkage upper position.

Important: Stabilisers that are too tight can prevent the linkage from moving down or make the force control inoperative.

AUTOMATIC HITCHES

AUTOMATIC COUPLINGS

Fit the appropriate towing sockets (A) or (B) to the implement hitch pins.

Note: Check that the tow socket diameters match the implement hitch pins (category 2 and 3 hitches). If necessary fit cross members (C).

COUPLING THE IMPLEMENT

- Offer up the tractor to the implement.
- Raise the hitch until the end fittings lock.
- Lower the hitch.
- Couple the end fitting of the top link to the implement hitch pin.
- Connect the hydraulic hoses, the electric cables and the drive shaft linking the implement to the tractor.

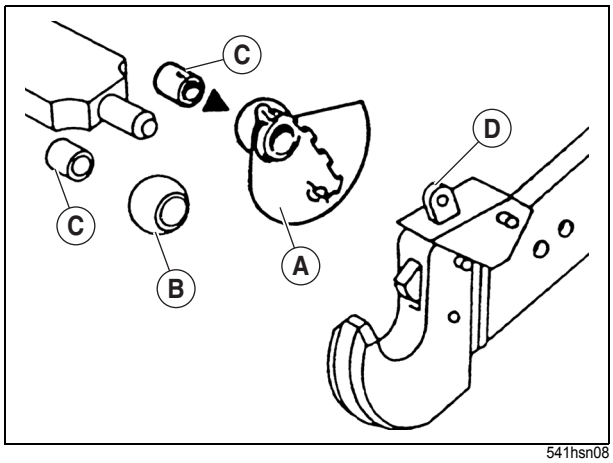
UNCOUPLING THE IMPLEMENT

- Lower the implement to the ground.
- Disengage the top link from the implement.
- Lift the implement slightly.
- Disconnect the hydraulic hoses, the electric cables and the drive shaft linking the implement to the tractor.
- Lower the hitch until the hooks disengage (D).
- The top link (E) must be held vertically when not in use. Use catch (F) for this.
- Mounting (G) at the rear of the tractor holds hitch fittings when they are not being used.

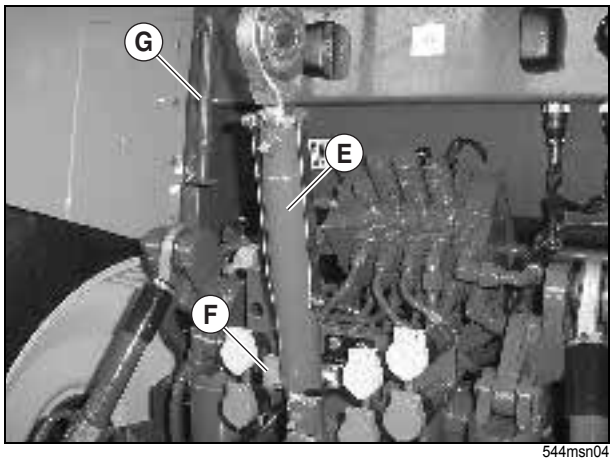
DRAW BAR COUPLINGS

- To adjust the height of the draw-bar coupling, pull handles (H) and slide the unit along. To lock it in position, release the handles.
- Automatic coupling: The drawbar is opened or closed using lever (J).

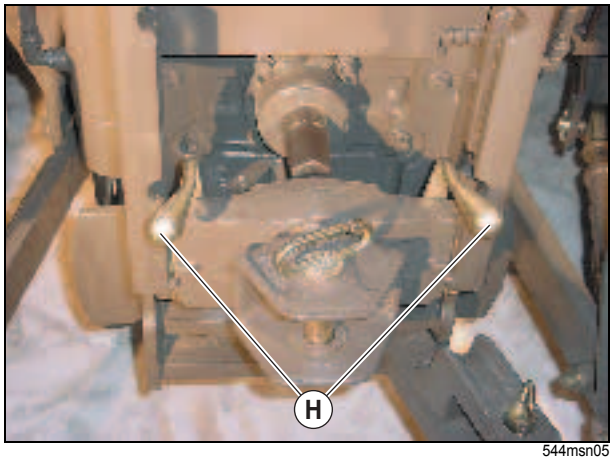
During hitching operations or when using the external linkage control, the operator must remain outside the hitch frame.



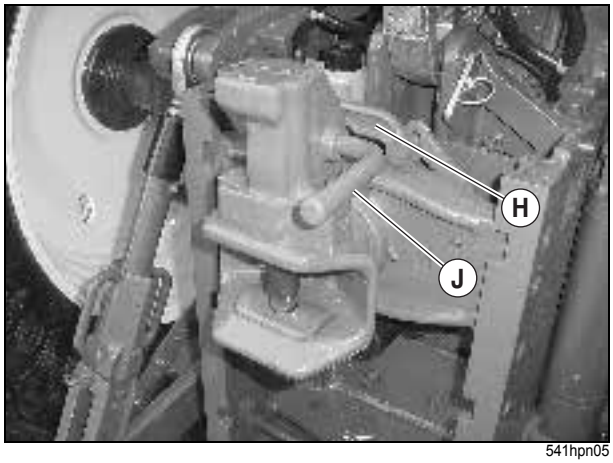
541hsn08



544msn04



544msn05



541hpn05

PICKER HOOK

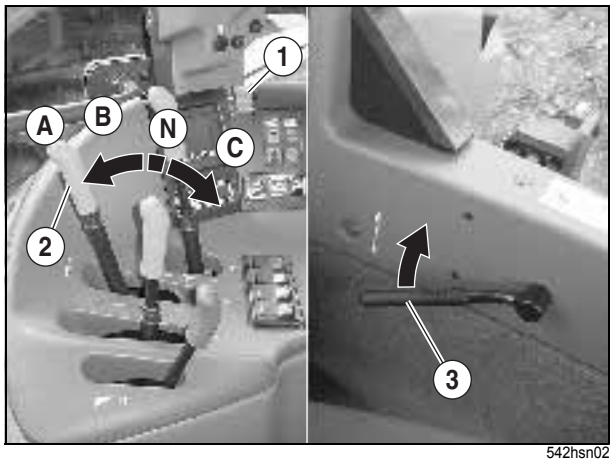
COUPLING AN IMPLEMENT

- From the driving position, raise the linkage bars fully using mode selector (1).
- Activate the spool valve (2), in floating position (A).
- Activate lever (3) to free the lock couplings.
- Lower the linkage arms to bring the coupling to the desired height.
- Carefully reverse the tractor making sure that the coupling does not sink into the ground.
- Activate spool valve (2):
  - Position (A): Floating, uncoupling.
  - Position (B): Coupling outlet.
  - Position (N): Neutral.
  - Position (C): Coupling return.

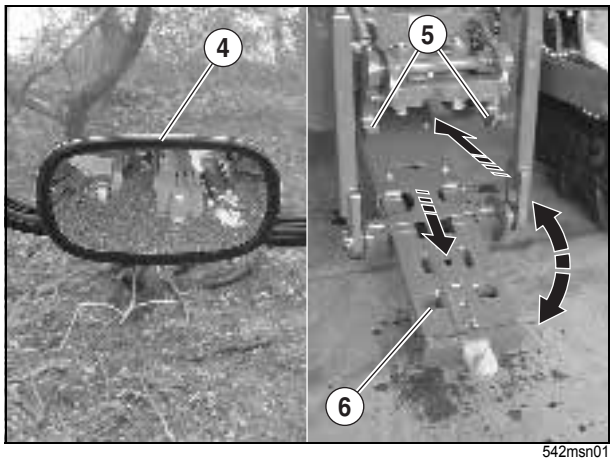
Use the rear window rear-view mirror (4) to engage the coupling in the trailor eyelet. Raise the linkage bars fully using (1) in high position. The hitch is locked in high position by the couplings (5). Activate the spool valve (2) in position (C), until lengthwise locking (6) of the lower frame.

- Lower the linkage bars so that the weight of the equipment is carried by the hitch frame and not by the lift rods.
- Make sure that the equipment is hitched correctly and safely locked in position.
- Position (A) is reserved for the use of the distributor without the pickup hook.
- Position (B) is reserved during hitching and unhitching.

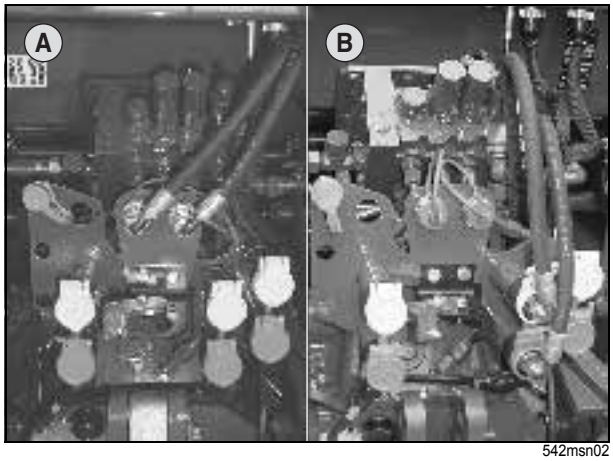
N.B.: As the pickup hook is supplied in flexible hoses, nothing stops them being connected to the other distributors, which modifies the instructions described above.



542hsn02



542msn01



542msn02

H - FRONT POWER TAKEOFF, LINKAGE AND FRONT COUPLING

CHARACTERISTICS

FRONT LINKAGE

- 2 double-acting cylinders, controlled by the double-acting auxiliary distributor located in the cab.
- Blocking the circuit by the external valve.

CAPACITY 2800 KG

- Automatic hooks, standard 3 (3/2 swivel).
- Foldable arms (Fixed or transport arm position).

CAPACITY 3800 KG

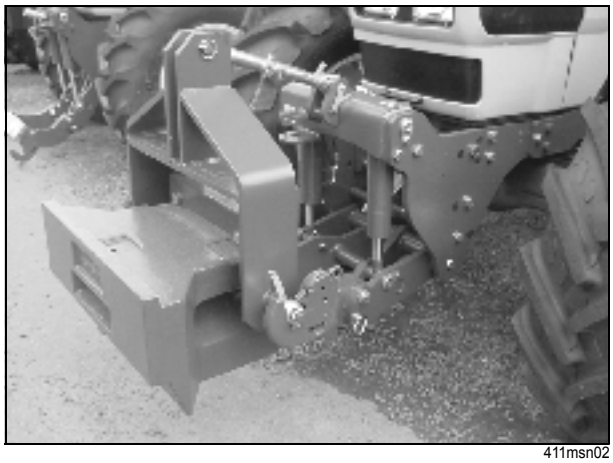
- Automatic hooks, standard 3 (3/2 swivel).
- Foldable arms (Fixed or transport arm position).
- Top thrust rod and nitrogen ball.

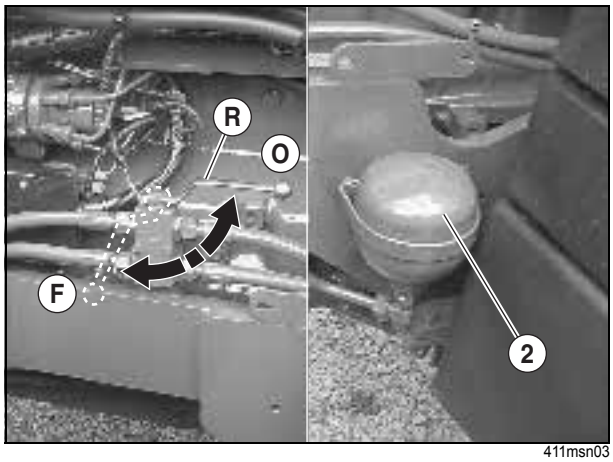
DAMPER

On the 3800 versions, a nitrogen ball damper (2) is adapted on the "upwards" linkage supply circuit. This damper protects the tractor beam when travelling with heavy loads on the road.

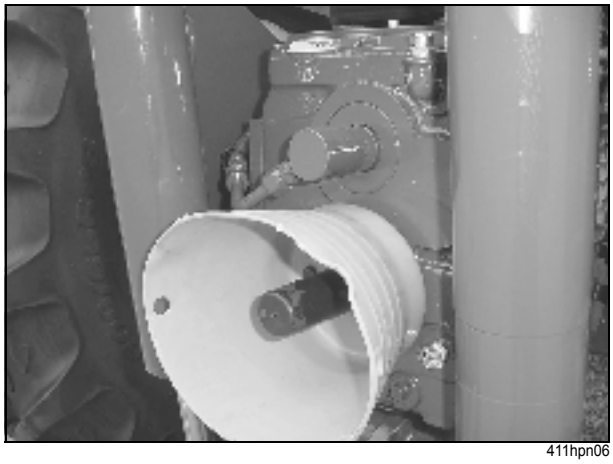
FRONT POWER TAKE-OFF

- Drive by direct connection to crankshaft.
- Electro-hydraulic clutch.
- Single-speed gear reducer.
- Power take-off rpm at engine rated rpm:
  1100 rpm for 2200 engine rpm.
- 1" 3/8 inch output shaft, 6 splines.
- Continuous admissible power: 88,3 kW (120 hp).
- Direction of rotation: Clockwise or counterclockwise.
- Electric control with switch on right panel.
- Operating indicator and power takeoff rotation speed display on instrument panel.


411msn02



411msn03


411hpn06

USING THE FRONT LINKAGE SYSTEM

Lever (1) controls the supply to the front linkage actuators and to the pressure take-offs at the rear of the tractor.

- Place valve (R) in position (O).
- Manoeuvre the (1) to 4 position lever:

Position A: Power supply (raise linkage).

Position B: Neutral.

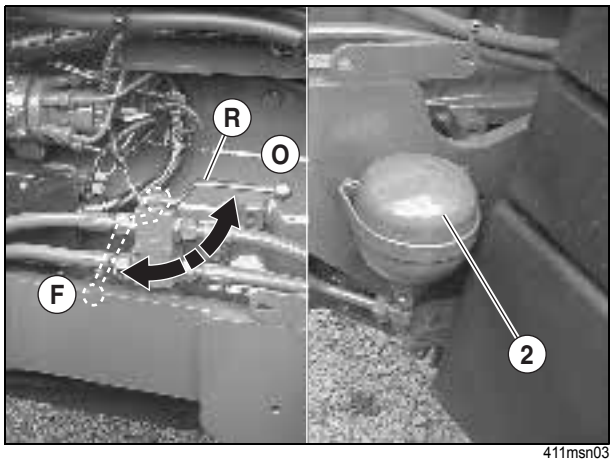
Position C: Power supply (lower linkage).

Position D: Floating . Enables the hitched implement to follow the undulations of uneven ground.

IMPORTANT: Do not use the rear power take-offs when the front linkage is in use.

On the road or when the linkage is no longer in use, place valve (R) in the closed position (F).

Note: When the tractor is equipped with the Electropilot, the front linkage control is systematically on the "y" axis of lever (7). Operation of lever (7): see chapter "G".



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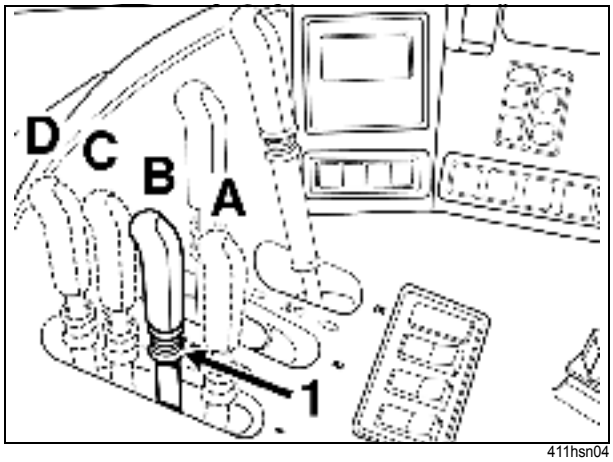
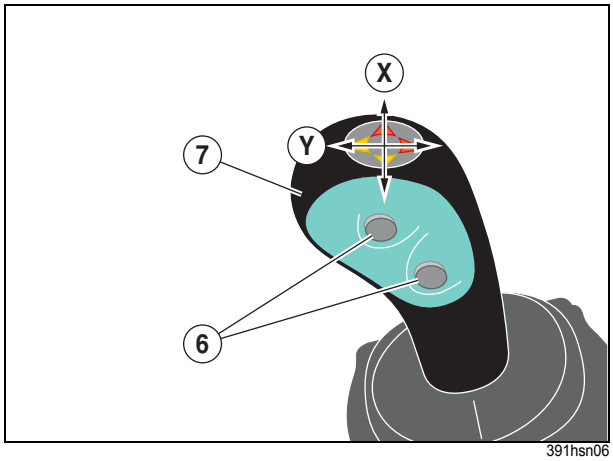


411hsn04



391hsn06

HITCH

ARM ADJUSTMENT

To change from "road" (1) position to "work" (2) position:

- Take out axle (L).
- Lower the linkage arm.
- Replace the axle.

> ***Stop the engine and apply the hand brake before carrying out any adjustments to the linkage arms.***

Important: When the front linkage is not in use, place the arms in the road position (1) and immobilise the top thrust arm.

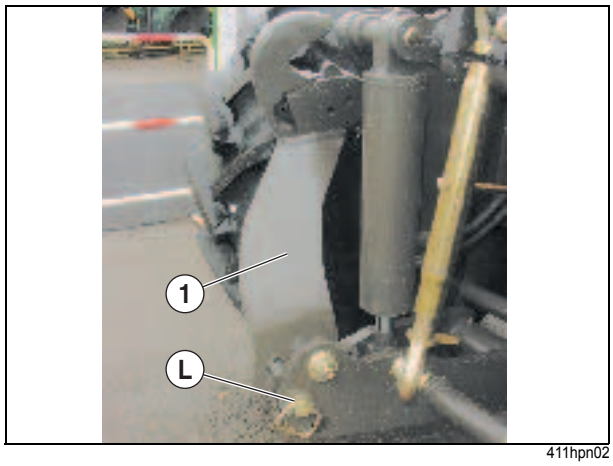
ADJUSTING THE TOP LINKAGE

Note: Tractor side, there are 2 attachment points (B) to secure the top linkage.

- Turn the center part to adjust the length of the linkage.

> ***The threaded lengths that are exposed (D) must be equal (maximum deviation 5 mm). The centreline distance (E) of the top linkage must not exceed 680 mm.***

Secure the linkage to the tool beam once adjustment is completed.



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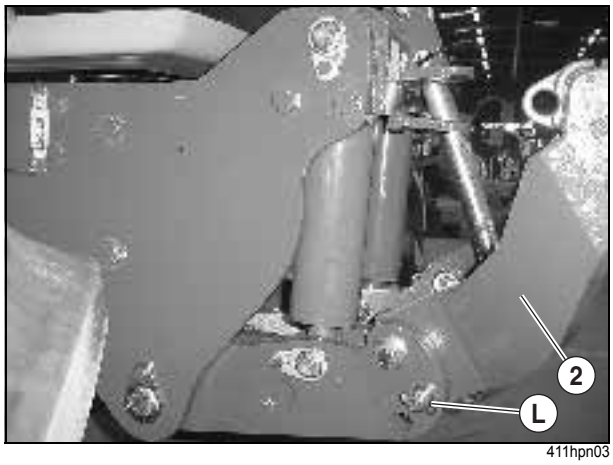

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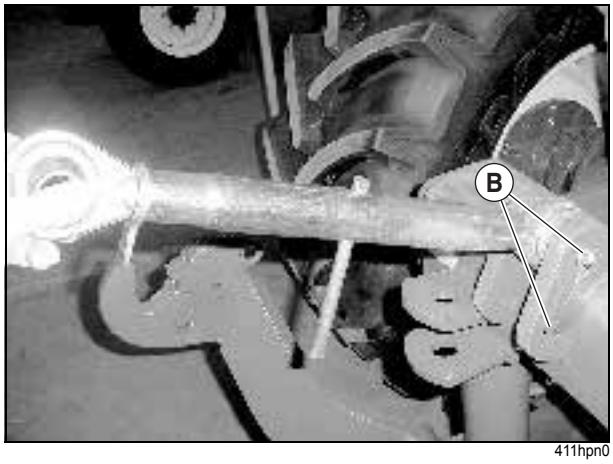
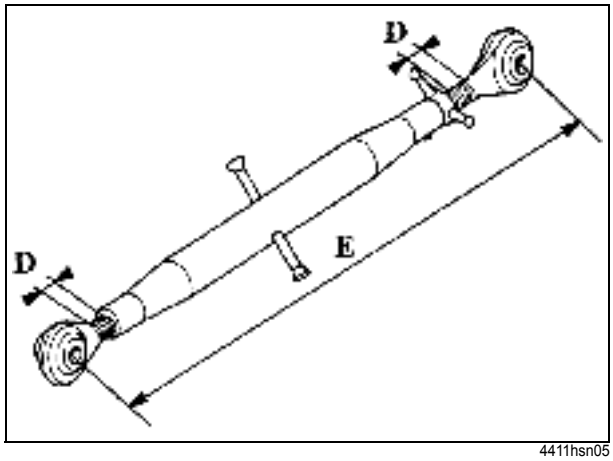


411hpn0



4411hsn05

USING THE FRONT POWER TAKEOFF

START-UP

Important: The front power take-off must be started or stopped with the engine at idling speed.

- Press button (1).

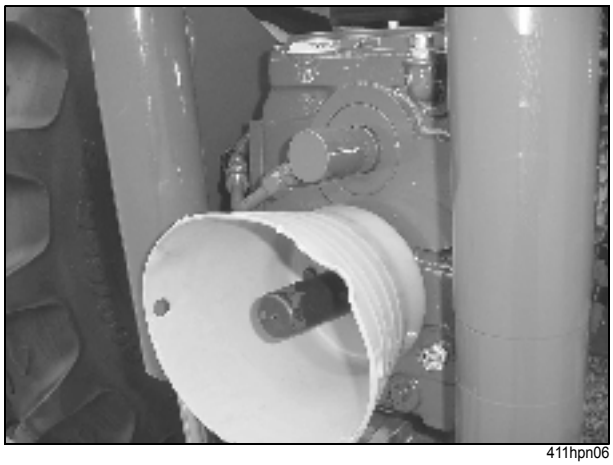
Note: The notch (3) on the switch locks the control button (1) and avoids accidentally starting up the front power take-off.

- Indicator (2) included in the combination control comes on.
- Accelerate the engine.
- To visualise the front power take-off speed on the console display panel (4), press the end of control lever (5) until the warning light appears (6).

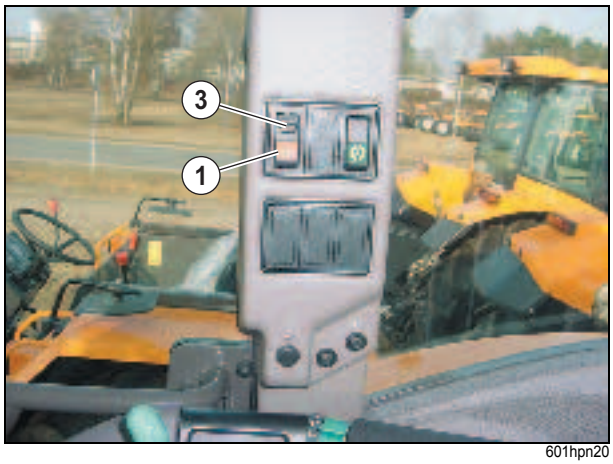
STOP

- Engine idling.
- Press button (1).
- Indicator (2) included in the combination control goes out.

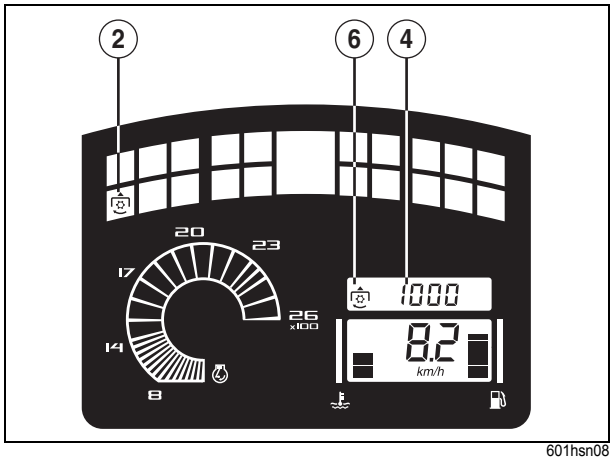
Do not wear loose fitting clothing that might get caught in moving parts. The engine must be stopped before coupling or uncoupling the attachment's universal joint shaft. When working, all the universal joint system must be in place. When repairing, adjusting or lubricating an attachment in the field, always set the PTO lever to neutral and stop the engine. When the PTO is not being used, replace the protective cover.



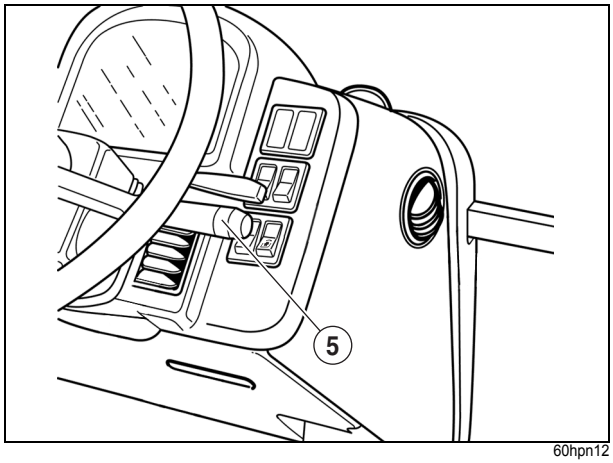
411hpn06



601hpn20



601hsn08



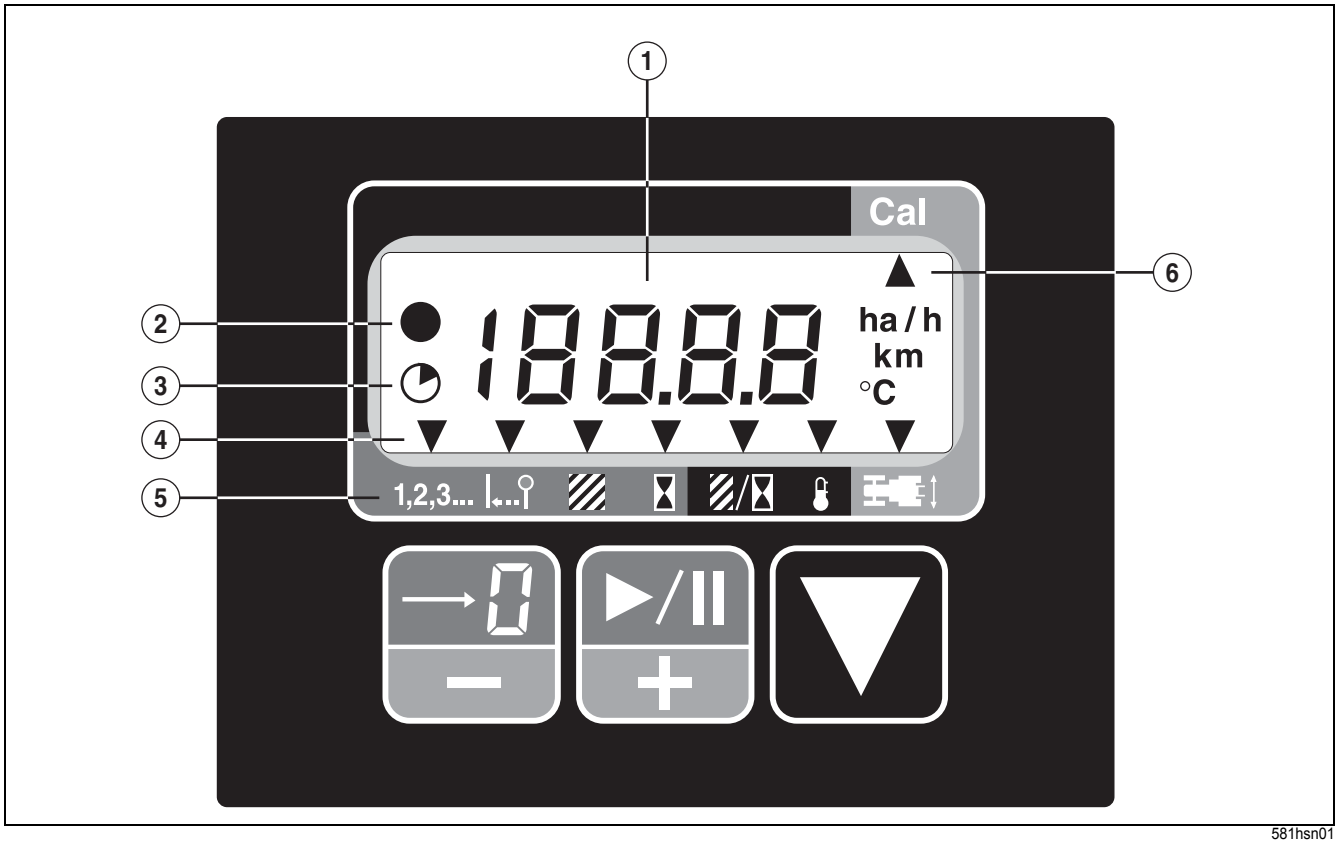
60hpn12

Notes

I - ON BOARD COMPUTER

ON-BOARD COMPUTER (INFOTRAC)

DESCRIPTION



581hsn01

1 - Digital display unit

2 - Total counter symbol

3 - Partial counter symbol

4 - Selected function index

5 - Symbols of the various functions (see opposite)

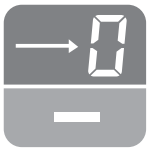
6 - Calibration mode selection index

DESCRIPTION OF SYMBOLS

1,2,3...	Partial event counter / Permanent event counter
	Partial travelled distance / Total travelled distance
	Partial worked surface / Total worked surface
	Partial worked time / Total worked time
	Instantaneous surface worked per hour
	Outside temperature
	Work width programming

DESCRIPTION (CONT)

KEY (A)



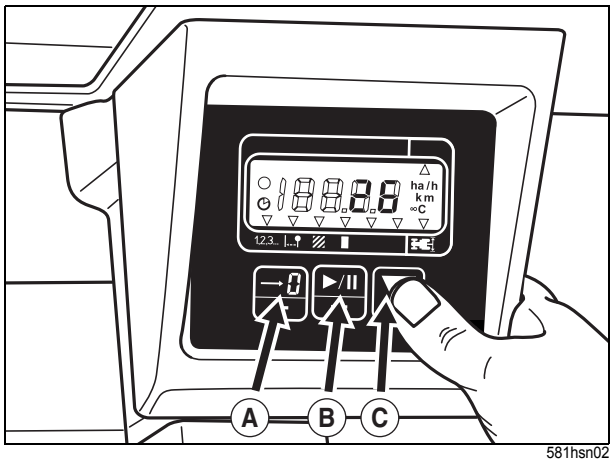
Counter resetting.
Key "-" when programming tool width.

KEY (B)

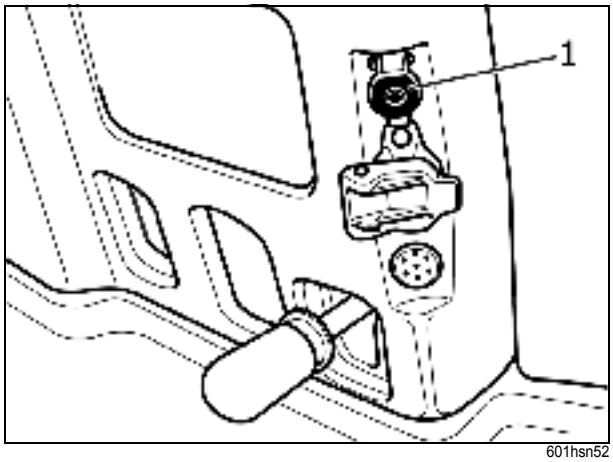
Counter "on/off" key.
Key "+" when programming tool width.

KEY (C)

Display mode selection and function scroll key:
Total or partial.



581hsn02



601hsn52

POSITIONING OF CONNECTIONS TO IMPLEMENTS EVENT COUNTER

Event counter connector

This connector (1) is located beside the right console, close to plug 25 A.

To install the contactor on the implement (example: round bail press), consult your approved CLAAS repair station.

Important: All repairs (or modifications) of the electrical circuit must be performed by your CLAAS qualified repairer, as an incorrect connection may lead to the deterioration of the electrical installation (wiring, units and in a particular the alternator), futhermore he will have the necessary parts of the adaptation.

OPERATION

AUTOTEST START-UP

When the ignition is turned on, the INFOTRAC automatically engages an autotest of its display unit, which lasts approximately 3 seconds. All the figures, symbols and units appear in the display.

After engine start-up, INFOTRAC automatically engages the function used when the engine was stopped.

PARTIAL EVENT COUNTER FUNCTION

With key (C), put index ▼ in front of symbol 1,2,3... .

The display unit shows the number of events completed (e.g., round bales) since the last reset.

Resetting is accessible at all times using key (A) (press 0,5 second minimum) and does not reset the total event counter.

Counting may be stopped and manually continued at all times using key (B) (press 0,5 second minimum).

◔ Lit: Counter stopped.

◔ BLINKING: Counter on.

Display: In unit, 1, 2, 3, 4, 5, 6,...

TOTAL EVENT COUNTER FUNCTION

From the previous situation, pressing for more than 2 seconds on key C accesses the total event counter.

The display unit shows the number of events completed (e.g., round bales) since the last reset.

The cycle reset is accessible with key (A) (press for 0,5 second minimum) and resets the partial and total event counter.

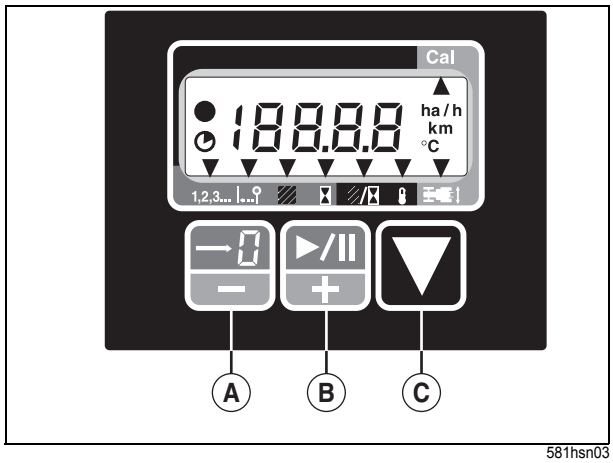
Counting may be stopped and manually continued at all times using key (B) (press 0,5 second minimum).

● Lit: Counter stopped.

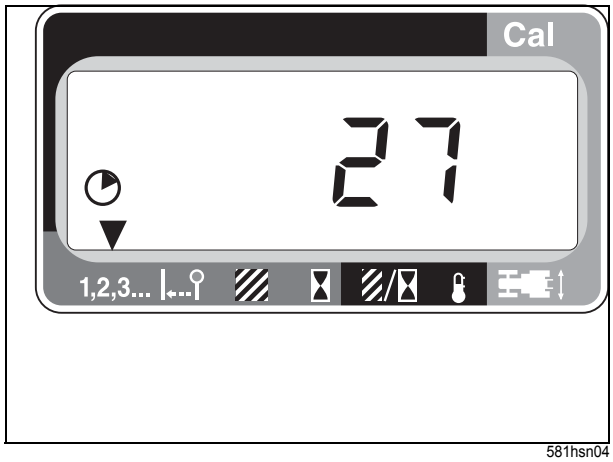
● BLINKING: Counter on.

Display: In unit, 1, 2, 3, 4, 5, 6,...

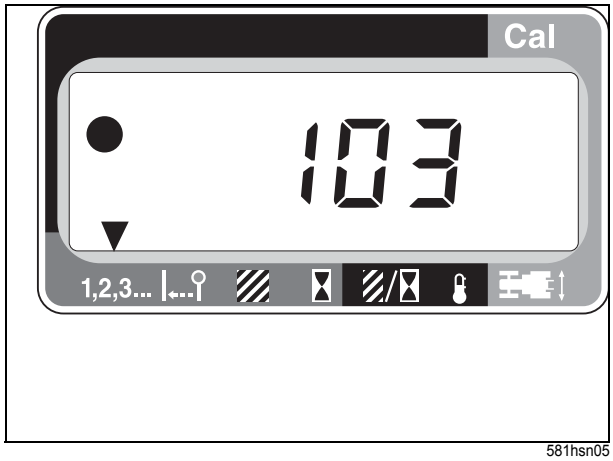
Note: Use of the partial and total event counter functions require the installation of a contact on the tool. For supply and installation of the contact, contact your approved CLAAS repair station.



581hsn03



581hsn04



581hsn05

PARTIAL TRAVELLED DISTANCE FUNCTION

With key (C), put index ▼ in front of symbol  .

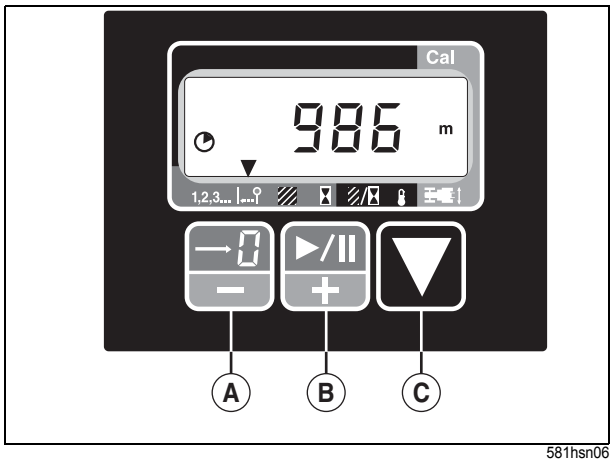
The display unit gives the travelled distance since the last reset.

The cycle reset is accessible at all times using key (A) and resets the partial distance counter.

Counting may be stopped and manually continued at all times using key (B).

◔ Lit: Counter stopped.

◔ BLINKING: Counter on.



581hsn06

TOTAL TRAVELLED DISTANCE FUNCTION

From the previous situation, press key (C) for longer than 2 seconds to access the total distance counter.

The cycle reset is accessible with key (A) which simultaneously resets the partial and total distance counter.

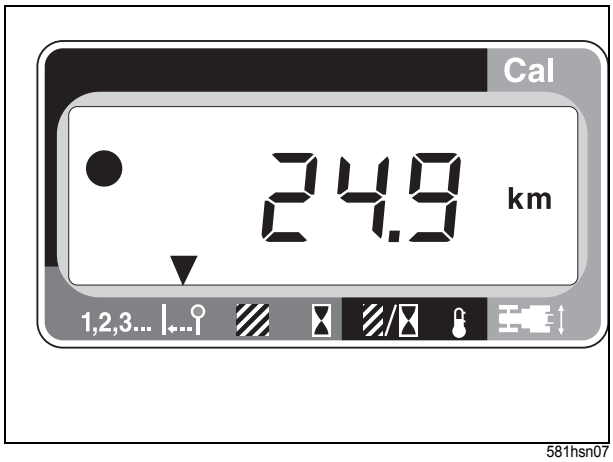
Counting may be stopped and manually continued at all times using key (B).

● Lit: Counter stopped.

● BLINKING: Counter on.

This frequently happens when working heavy land: Comply with a few simple rules and your engine will give full satisfaction

- From 0 to 999 m, in metres
- From 1,0 to 99,9 km, in km and tenths of km
- From 100 to 999 km, in km



581hsn07

PARTIAL WORKED SURFACE FUNCTION

With key (C), put index ▼ in front of symbol  .

The display unit indicates the worked surface area since the last reset.

Reset is accessible at any time with key (A) and does not affect the reset of the total surface worked counter.

Counting may be stopped and manually continued at all times using key (B).

◔ Lit: Counter stopped.

◔ BLINKING: Counter on.

Counting is related to the position of the lifting arm (function valid for lifting TCE 15 and 25).

Display: In hectares and tenths of a hectare.

581hsn08

TOTAL WORKED SURFACE FUNCTION

From the previous configuration, pressing key (C) for more than 2 seconds gives access to the total worked surface.

The screen gives the total time worked since the last zero reset.

The cycle reset is accessible with key (A) which simultaneously resets the partial and total surface worked counter.

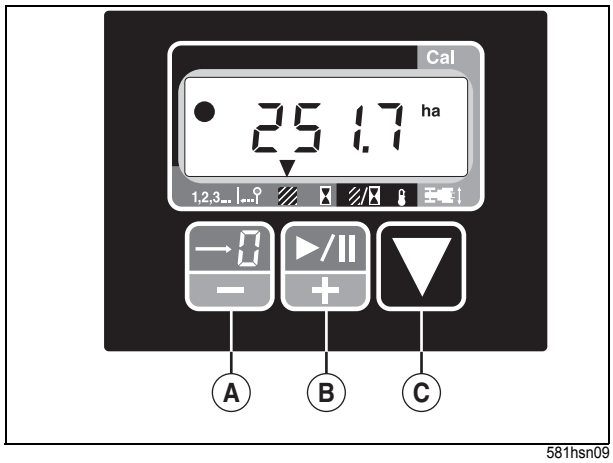
Counting may be stopped and manually continued at all times using key (B).

● Lit: Counter stopped.

● BLINKING: Counter on.

Counting is related to the position of the lifting arm (function valid for lifting TCE 15 and 25).

Display: In hectares and tenths of a hectare.



581hsn09

PARTIAL WORKED TIME FUNCTION

With key (C), put index ▼ in front of symbol  .

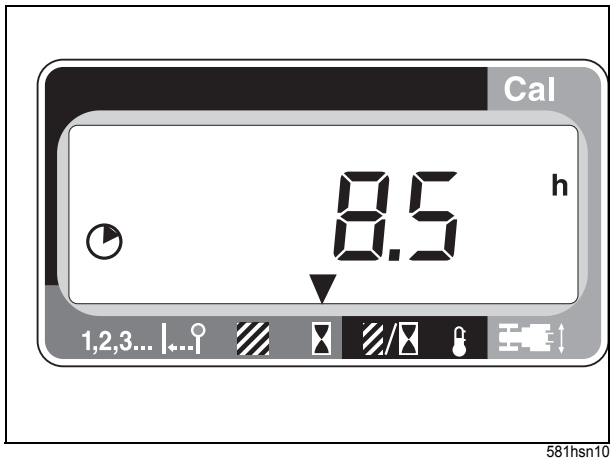
The display shows the working time since the last reset.

Resetting is accessible at all times using key (A) and does not reset the total worked time counter.

Counting may be stopped and manually continued at all times using key (B).

◔ Lit: Counter stopped.

◔ BLINKING: Counter on.



581hsn10

TOTAL WORKED TIME FUNCTION

From the previous configuration, pressing key (C) for more than 2 seconds gives access to the total worked time.

The screen gives the total time worked since the last zero reset.

The cycle reset is accessible with key (A) which simultaneously resets the partial and total worked time counter.

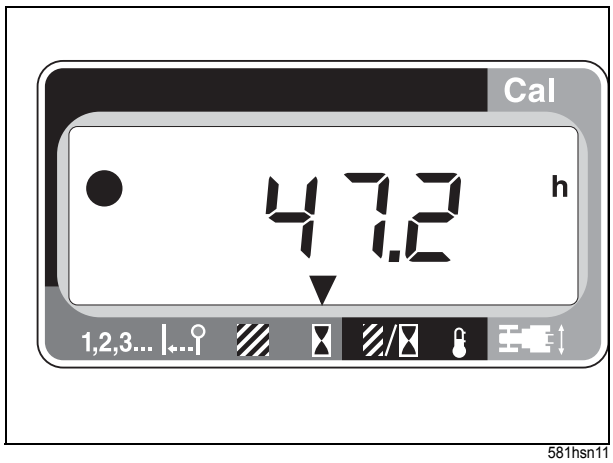
Counting may be stopped and manually continued at all times using key (B).

● Lit: Counter stopped.

● BLINKING: Counter on.

This frequently happens when working heavy land: It stops when the lifting arm moves up and starts again when the arm moves down.

- From 0 to 99,9 h, in hours and tenths of hours
- From 100 to 999 h, in hours



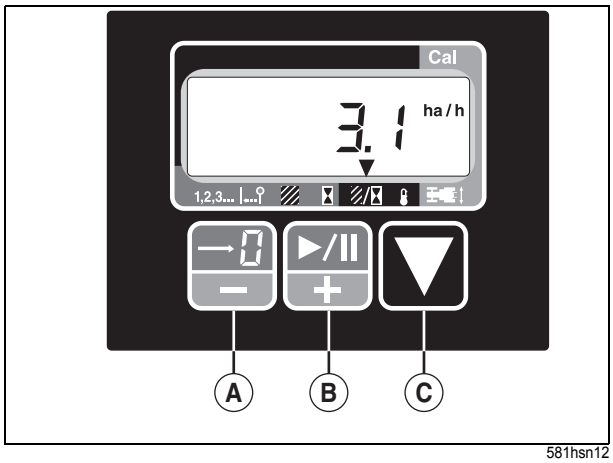
581hsn11

INSTANTANEOUS SURFACE WORKED PER HOUR FUNCTION

With key (C), put index ▼ in front of symbol  .

The display unit indicates the instantaneous surface worked per hour.

Display: In hectares and tenths of hectares per hour.



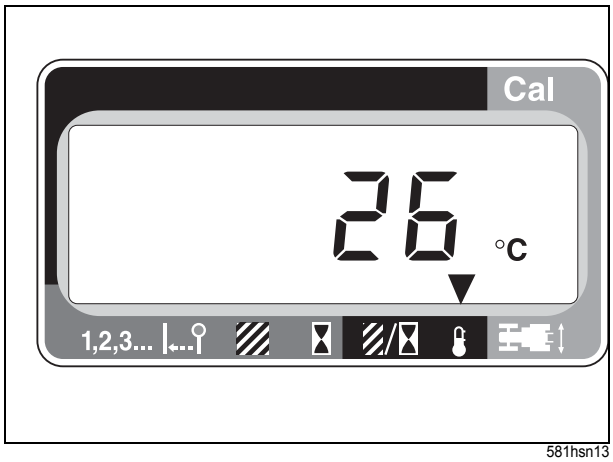
581hsn12

OUTSIDE TEMPERATURE FUNCTION

With key (C), put index ▼ in front of symbol  .

The display unit indicates the outside temperature.

Display: In degrees Celsius (°C)



581hsn13

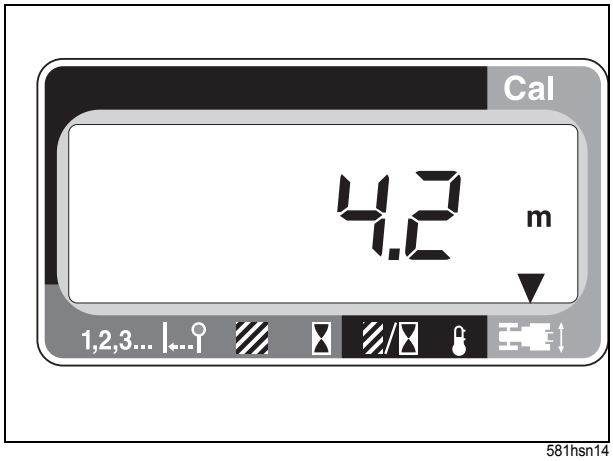
TOOL WIDTH PROGRAMMING

This programming is required by the computer to calculate worked surfaces.

With key (C), put index ▼ in front of symbol  .

The display unit indicates the width of the tool in meters.

The width is modified by pressing keys (A) (-) and (B) (+).A brief press on switch (C) validates the new value.



581hsn14

INFOTRAC CALIBRATION PROCEDURE "OPERATING SPEED"

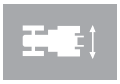
The operating speed has to be calibrated when you change the size of the rear tires or the radar (if the tractor is fitted with it).

Note: The original calibration is carried out with new tyres. Depending on tire wear, it is recommended to recalibrate the INFOTRAC.

Procedure

1 - Set up 2 marks 100 metres apart on a level, straight and dry metalled road.

2 - Stop the tractor at approximately 15 to 20 meters before the first marker.

3 - With key (C), put index ▼ in front of symbol  .

4 - Press key (C) for at least 3 seconds until the former calibration value and index ▲ under the "Cal" indication is displayed.

5 - Select a forward gear to suit an average speed of 7 km/h.

6 - Use the clutch and accelerator manually to keep to a stable forward speed.

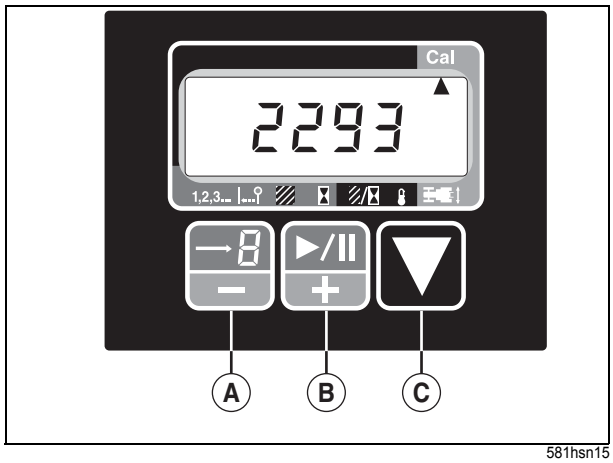
7 - When passing the first marker, press key (B), the former value disappears and a flashing value is displayed which changes proportionally to the travelled distance. This display indicates that calibration is in progress.

8 - As soon as the second marker is passed, press key (B) again.

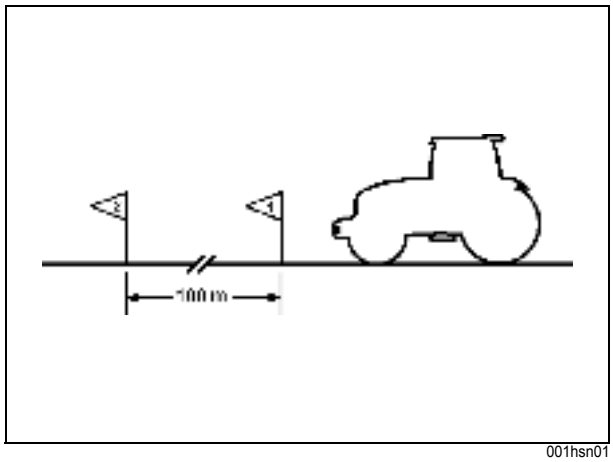
9 - Briefly pressing key (C) validates the new calibration value.

10 - Pressing key (C) again returns the display to the partial event counter function.

Note: If problems are encountered before calibration validation), you can quit the calibration mode by pressing key (C). In this case, the former calibration is kept. Therefore, you must restart the calibration procedure from the beginning.



581hsn15



001hsn01

J - WHEELS AND TYRES

GENERAL

Tyres play a vital role in agricultural work. They therefore merit special attention on your part:

- Inflation pressure: appropriate to the work to be done.
- Use of ballast: Always comply with our recommendations (see ballast table, chapter K).
- Replace tyres: when they are worn.
- Fit different types of tyres: for specific applications.

REPLACEMENT OF TYRES, USE OF DIFFERENT TYPES OF TYRE

On delivery, your tractor is fitted with tyres that you have chosen within CLAAS specifications (dimensions and makes of tyres, dimensions and makes of rims, front-rear combinations).

These specifications guarantee the tyres are suitable for the tractor:

- Size.
- Tractor speed.
- Load-bearing capabilities.
- They ensure the tractor structure (transmission - engine - chassis) will be horizontal in the fore-aft direction.
- Respect for the inter-axle ratio between the front axle and the rear axle.

SPECIAL CASE OF TRACTORS WITH FOUR WHEEL DRIVE

FRONT/REAR INTER-AXLE RATIO

The front and rear wheels are driving wheels but unequal in size. The front wheels must therefore turn more quickly to if they are to travel at the same forward speed as the rear wheels. To achieve this there is a constant mechanical ratio between the rotation of the rear wheels and the rotation of the front wheels: this is the inter-axle ratio (for example, for a ratio of 1,3439, when a rear wheel makes one turn, a front wheel makes 1,3439 turns). (For synchronisation ratios, refer to chapter "F"). Tyre size must take account of this inter-axle ratio.

Note: if fitting different tyres we advise you to contact an approved CLAAS agent.

TYRE PRESSURES

The "correct" tyre pressure depends on:

- The make and type of tyre.
- Its size.
- The equipment mounted on the tractor.
- The type of work.

OPERATING ON SOFT GROUND (TO IMPROVE GRIP)

Use the lowest allowable pressure for the load carried.

OPERATING ON HARD GROUND (ON THE ROAD, TOWING, ETC.)

Use close to the maximum pressure allowed, to protect the tyre casing and limit wear to the tread pattern.

Note: Follow the manufacturer's recommendations when selecting the optimum tyre pressure.

When inflating a tyre, it is advisable to use the pressures recommended by the manufacturer and never exceed the maximum pressure: the tyre could burst. Replace any worn or faulty tyres (cuts, cracks, etc.).

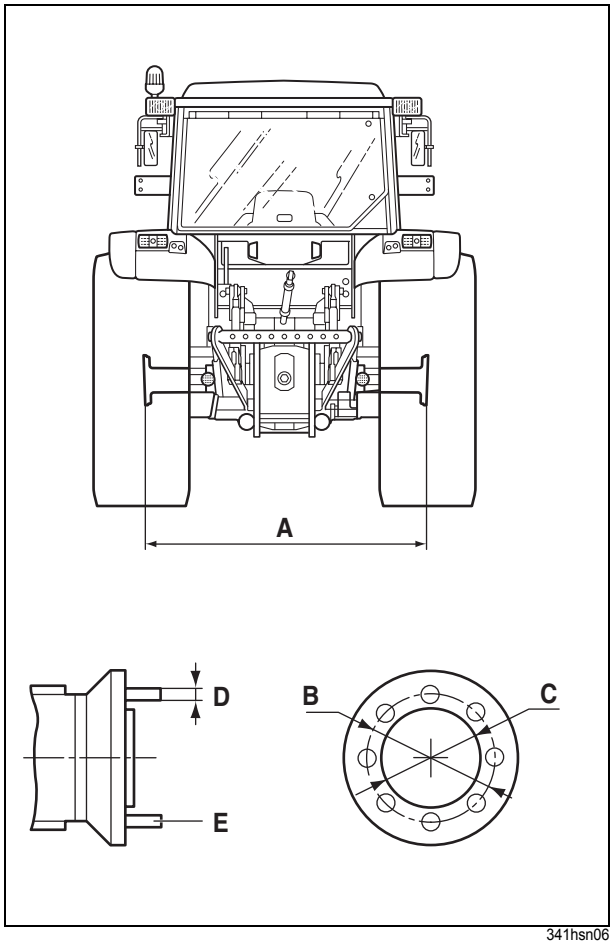
Note: The maximum pressure is usually indicated on the side of the tyre.

Exposure of the tyres to a heat source or to sunlight increases the pressure.

Impact on cultivation work	Impact on transit driving
Correct inflation Correct tread penetration and, therefore, good grip. Good tread self-cleaning. 	Correct inflation Minimum wear. 
Under inflation Insufficient penetration reduces grip. Walls damaged by traction forces. 	Under inflation Rapid, sometimes irregular wear. Wall damage. Rolling instability. 
Over inflation Poor cleaning reduces grip. Likelihood of impact damage and cuts on walls. 	Over inflation Hard ride. Likelihood of impact damage and cuts. 

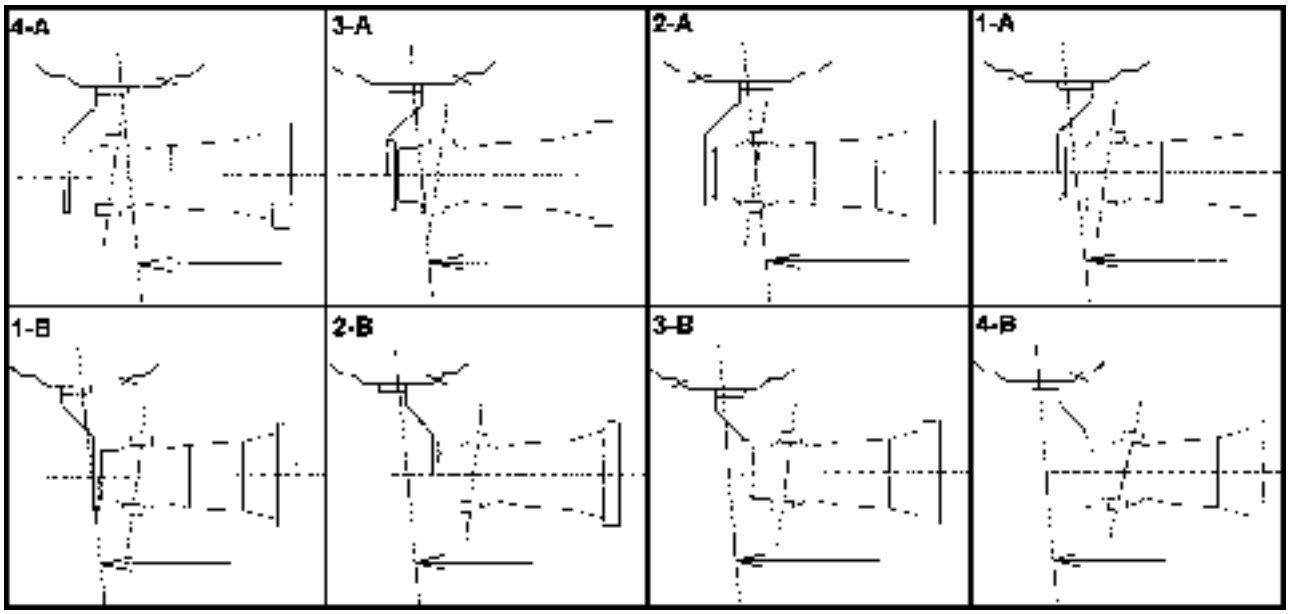
REAR AXLE CHARACTERISTICS

	500-616-656 Range	696	696 with smooth shaft
Between hub plates (A) (in mm)	1775	1835	Smooth
Diameter of stud ring (in mm) (B)	203,2	203,2	335
Diameter of wheel alignment boss (in mm) (C)	149,35	149,35	280,8
Stud diameter (in mm) (D)	18	18	22
Number of studs (E)	8	8	10



341hsn06

TABLES OF FRONT TRACKS



511hsn07

Type of front axle: 20.19											
ARES 546-556 Normal front axle											
Rims with connector bars or welded circle											
Front tracks (in mm)											
	Tyres	**Type**	**Make**	**4-A**	**3-A**	**2-A**	**1-A**	**1-B**	**2-B**	**3-B**	**4-B**
	11.2R28	W 10VV-28	a	1571	1685	**1777**	1891	1871	2077	1985	2191
	11.2R28	W 10VV-28	b	1576	1689	**1773**	1887	1876	2073	1989	2187
▲	**13.6R24**	W 12-24	b	1640	1736	1860	1956	**1808**	2028	1904	2124
	13.6R28	W 12-28	a	1575	1689	1669	**1782**	1975	2089	2069	2182
	13.6R28	W 12-28	b	1583	1696	1661	**1775**	1983	2096	2061	2175
	14.9R24	W 12-24	b	1638	1734	1858	1954	**1806**	2026	1902	2122
●	**14.9R28**	W 12-28	a	1574	1688	1668	**1781**	1974	2088	2068	2181
●	**14.9R28**	W 12-28	b	1582	1695	1660	**1774**	1982	2095	2060	2174
	280/85R28	W 10VV-28	a	1571	1685	**1777**	1891	1871	2077	1985	2191
	280/85R28	W 10VV-28	b	1576	1689	**1773**	1887	1876	2073	1989	2187
▲	**340/85R24**	W 12-24	b	1640	1736	1860	1956	**1808**	2028	1904	2124
	340/85R28	W 12-28	a	1575	1689	1669	**1782**	1975	2089	2069	2182
	340/85R28	W 12-28	b	1583	1696	1661	**1775**	1983	2096	2061	2175
▲	**380/70R24**	W 12-24	b	1640	1736	1860	1956	**1808**	2028	1904	2124
	380/70R28	W 12-28	a	1575	1689	1669	**1782**	1976	2089	2069	2182
	380/70R28	W 12-28	b	1583	1696	1661	**1775**	1983	2096	2062	2175
	380/85R24	W 12-24	b	1638	1734	1858	1954	**1806**	2026	1902	2122
●	**380/85R28**	W 12-28	a	1574	1688	1668	**1781**	1974	2088	2068	2181
●	**380/85R28**	W 12-28	b	1582	1695	1660	**1774**	1982	2095	2060	2174
	420/70R24	W 12-24	b	1638	1734	1858	1954	**1806**	2026	1902	2122
●	**420/70R28**	W 12-28	a	1574	1688	1668	**1781**	1974	2088	2068	2181
●	**420/70R28**	W 12-28	b	1582	1695	1660	**1774**	1982	2095	2060	2174
▲	**440/65R24**	W 12-24	b	1640	1736	1860	1956	**1808**	2028	1904	2124
	440/65R28	W 12-28	a	1575	1689	1669	**1782**	1976	2089	2069	2182
	440/65R28	W 12-28	b	1583	1696	1661	**1775**	1983	2096	2062	2175
●	**480/65R28**	W 12-28	a	1574	1688	1668	**1781**	1974	2088	2068	2181
●	**480/65R28**	W 12-28	b	1582	1695	1660	**1774**	1982	2095	2060	2174

▲ Only ARES 546

● Only ARES 556

a: Titan France.
b: Titan Italy or Titan.

Delivery track in bold.

TABLES OF FRONT TRACKS

Type of front axle: 20.22											
ARES 566-616-656 Normal front axle											
Rims with connector bars or welded circle											
Front tracks (in mm)											
	Tyres	**Type**	**Make**	**4-A**	**3-A**	**2-A**	**1-A**	**1-B**	**2-B**	**3-B**	**4-B**
▲	**13.6R28**	W 12-28	a	1575	1689	1669	**1782**	1975	2089	2069	2182
▲	**13.6R28**	W 12-28	b	1583	1696	1661	**1775**	1983	2096	2061	2175
	14.9R28	W 12-28	a	1574	1688	1668	**1781**	1974	2088	2068	2181
	14.9R28	W 12-28	b	1582	1695	1660	**1774**	1982	2095	2060	2174
●	**16.9R28**	W 15L-28	a	1573	1686	1666	**1780**	1973	2086	2066	2180
●	**16.9R28**	W 15L-28	b	1580	1694	1659	**1772**	1980	2094	2059	2172
▲	**340/85R28**	W 12-28	a	1575	1689	1669	**1782**	1975	2089	2069	2182
▲	**340/85R28**	W 12-28	b	1583	1696	1661	**1775**	1983	2096	2061	2175
▲	**380/70R28**	W 12-28	a	1575	1689	1669	**1782**	1975	2089	2069	2182
▲	**380/70R28**	W 12-28	b	1583	1696	1661	**1775**	1983	2096	2061	2175
	380/85R28	W 12-28	a	1574	1688	1668	**1781**	1974	2088	2068	2181
	380/85R28	W 12-28	b	1582	1695	1660	**1774**	1982	2095	2060	2174
	420/70R28	W 12-28	a	1574	1688	1668	**1781**	1974	2088	2068	2181
	420/70R28	W 12-28	b	1582	1695	1660	**1774**	1982	2095	2060	2174
●	**420/85R28**	W 15L-28	a	1573	1686	1666	**1780**	1973	2086	2066	2180
●	**420/85R28**	W 15L-28	b	1580	1694	1659	**1772**	1980	2094	2059	2172
▲	**440/65R28**	W 12-28	a	1575	1689	1669	**1782**	1975	2089	2069	2182
▲	**440/65R28**	W 12-28	b	1583	1696	1661	**1775**	1983	2096	2061	2175
	480/65R28	W 12-28	a	1574	1688	1668	**1781**	1974	2088	2068	2181
	480/65R28	W 12-28	b	1582	1695	1660	**1774**	1982	2095	2060	2174
●	**480/70R28**	W 15L-28	a	1573	1686	1666	**1780**	1973	2086	2066	2180
●	**480/70R28**	W 15L-28	b	1580	1694	1659	**1772**	1980	2094	2059	2172
●	**540/65R28**	W 15L-28	a	1573	1686	1666	**1780**	1973	2086	2066	2180
●	**540/65R28**	W 15L-28	b	1580	1694	1659	**1772**	1980	2094	2059	2172

▲ Only 566 and 616

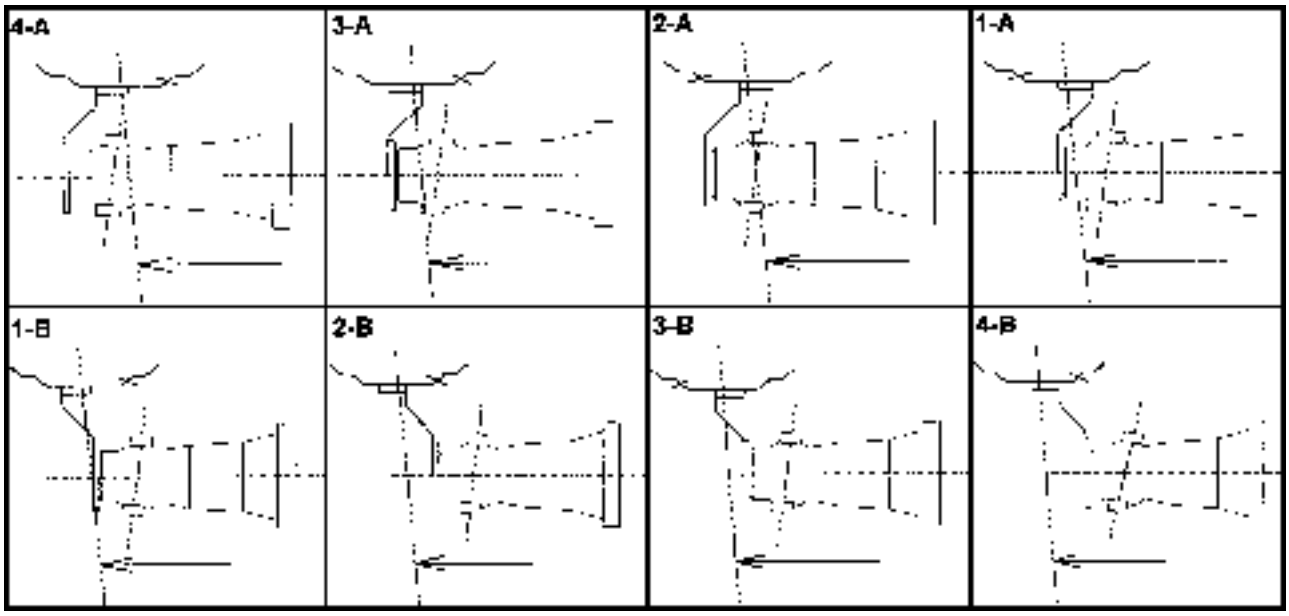
● Only ARES 656

Type of front axle: 20.29										
ARES 696 Normal front axle										
Rims with connector bars or welded circle										
Front tracks (in mm)										
Tyres	**Type**	**Make**	**4-A**	**3-A**	**2-A**	**1-A**	**1-B**	**2-B**	**3-B**	**4-B**
14.9R28	W 12-28	a	1504	1618	1738	1851	**1804**	1918	2038	2151
14.9R28	W 12-28	b	1494	1608	1728	1841	**1814**	1928	2048	2161
16.9R28	W 15L-28	a	1592	**1792**	1692	1892	1760	1860	1960	2060
16.9R28	W 15L-28	b	1592	**1792**	1692	1892	1760	1860	1960	2060
380/85R28	W 12-28	a	1504	1618	1738	1851	**1804**	1918	2038	2151
380/85R28	W 12-28	b	1494	1608	1728	1841	**1814**	1928	2048	2161
420/70R28	W 12-28	a	1504	1618	1738	1851	**1804**	1918	2038	2151
420/70R28	W 12-28	b	1494	1608	1728	1841	**1814**	1928	2048	2161
420/85R28	W 15L-28	a	1592	**1792**	1692	1892	1760	1860	1960	2060
420/85R28	W 15L-28	b	1592	**1792**	1692	1892	1760	1860	1960	2060
480/65R28	W 12-28	a	1504	1618	1738	1851	**1804**	1918	2038	2151
480/65R28	W 12-28	b	1494	1608	1728	1841	**1814**	1928	2048	2161
480/70R28	W 15L-28	a	1550	**1750**	1650	1850	1850	2050	1950	2150
480/70R28	W 15L-28	b	1550	**1750**	1650	1850	1850	2050	1950	2150
540/65R28	W 15L-28	a	1550	**1750**	1650	1850	1850	2050	1950	2150
540/65R28	W 15L-28	b	1550	**1750**	1650	1850	1850	2050	1950	2150

a: Titan France.
b: Titan Italy or Titan.

Delivery track in bold.

TABLES OF FRONT TRACKS



511hsn07

Type of front axle: 20.29 SI											
ARES range 500-600 PROACTIV Front Axle											
Rims with connector bars or welded circle											
Front tracks (in mm)											
	Tyres	**Type**	**Make**	**4-A**	**3-A**	**2-A**	**1-A**	**1-B**	**2-B**	**3-B**	**4-B**
◆	**11.2R28**	W 10-28	b	1642	1755	1839	1953	1810	1923	**2007**	2121
●	**13.6R28**	W 12-28	a	1569	1683	1775	1889	1869	**1983**	2075	2189
●	**13.6R28**	W 12-28	b	1545	1659	1779	1892	1865	**1979**	2099	2212
■	**14.9R28**	W 12-28	a	1568	1682	1774	1888	1868	**1982**	2074	2188
■	**14.9R28**	W 12-28	b	1544	1658	1778	1891	1864	**1978**	2098	2211
▲	**16.9R28**	W 15L-28	a	1576	1776	1676	1876	1876	2076	**1976**	2176
▲	**16.9R28**	W 15L-28	b	1576	1776	1676	1876	1876	2076	**1976**	2176
◆	**280/85R28**	W 10-28	b	1642	1755	1839	1953	1810	1923	**2007**	2121
●	**340/85R28**	W 12-28	a	1569	1683	1775	1889	1869	**1983**	2075	2189
●	**340/85R28**	W 12-28	b	1545	1659	1779	1892	1865	**1979**	2099	2212
●	**380/70R28**	W 12-28	a	1569	1683	1775	1889	1869	**1983**	2075	2189
●	**380/70R28**	W 12-28	b	1545	1659	1779	1892	1865	**1979**	2099	2212
■	**380/85R28**	W 12-28	a	1568	1682	1774	1888	1868	**1982**	2074	2188
■	**380/85R28**	W 12-28	b	1544	1658	1778	1891	1864	**1978**	2098	2211
■	**420/70R28**	W 12-28	a	1568	1682	1774	1888	1868	**1982**	2074	2188
■	**420/70R28**	W 12-28	b	1544	1658	1778	1891	1864	**1978**	2098	2211
▲	**420/85R28**	W 15L-28	a	1576	1776	1676	1876	1876	2076	**1976**	2176
▲	**420/85R28**	W 15L-28	b	1576	1776	1676	1876	1876	2076	**1976**	2176
●	**440/65R28**	W 12-28	a	1569	1683	1775	1889	1869	**1983**	2075	2189
●	**440/65R28**	W 12-28	b	1545	1659	1779	1892	1865	**1979**	2099	2212
■	**480/65R28**	W 12-28	a	1568	1682	1774	1888	1868	**1982**	2074	2188
■	**480/65R28**	W 12-28	b	1544	1658	1778	1891	1864	**1978**	2098	2211
▲	**480/70R28**	W 15L-28	a	1576	1776	1676	1876	1876	2076	**1976**	2176
▲	**480/70R28**	W 15L-28	b	1576	1776	1676	1876	1876	2076	**1976**	2176
▲	**540/65R28**	W 15L-28	a	1576	1776	1676	1876	1876	2076	**1976**	2176
▲	**540/65R28**	W 15L-28	b	1576	1776	1676	1876	1876	2076	**1976**	2176

◆ Only ARES 546 and 556
■ Except ARES 546

▲ Only ARES 656 and 696
● Except ARES 656 and 696

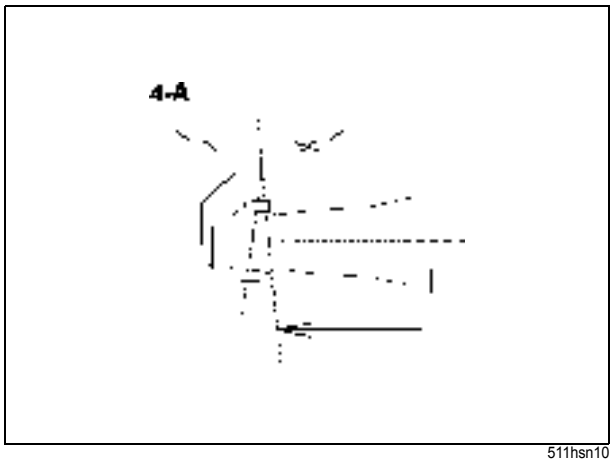
a: Titan France.
b: Titan Italy or Titan.

Delivery track in bold.

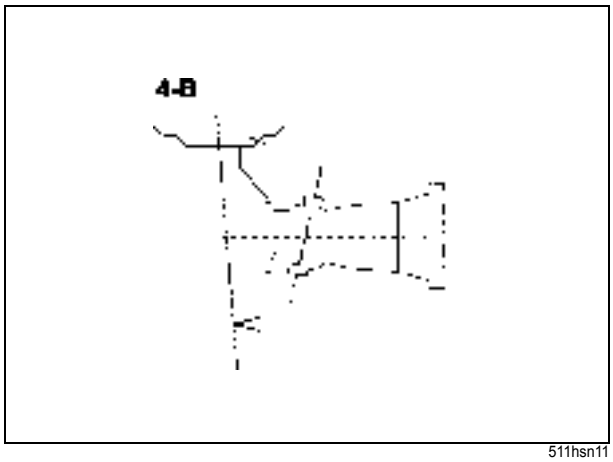
TABLES OF FRONT TRACKS

Type of front axle: A 2019-1					
ARES 546-556-566 Normal front axle					
Rims with fixed wheel disc				**Minimum track (in mm)**	**Maximum track (in mm)**
	Tyres	**Type**	**Make**	**4-A**	**4-B**
	13.6R24	W 12-24	b	**1740**	2020
	14.9R24	W 12-24	b	**1740**	2020
	11.2R28	W 10-28	b	**1781**	1981
	12.4R28	W 10-28	b	**1780**	1980
▲	**13.6R28**	W 12-28	b	**1779**	1979
▲	**14.9R28**	W 12-28	b	**1778**	1978
	380/70R24	W 12-24	b	**1742**	2022
	380/85R24	W 12-24	b	**1740**	2020
	420/70R24	W 12-24	b	**1740**	2020
	440/65R24	W 12-24	b	**1742**	2022
	480/65R24	W 12-24	b	**1740**	2020
	280/85R28	W 10-28	b	**1781**	1981
	320/85R28	W 10-28	b	**1780**	1980
▲	**340/85R24**	W 12-28	b	**1779**	1979
▲	**380/70R28**	W 12-28	b	**1779**	1979
▲	**380/85R28**	W 12-28	b	**1778**	1978
▲	**420/70R28**	W 12-28	b	**1778**	1978
▲	**440/65R28**	W 12-28	b	**1779**	1979
	480/60R28	W 16L-28		**1801**	1961
▲	**480/65R28**	W 12-28	b	**1778**	1978

▲ Except Ares 566



511hsn10



511hsn11

Type of front axle: A 2022-1					
ARES 616-656 Normal front axle					
Rims with fixed wheel disc				**Minimum track (in mm)**	**Maximum track (in mm)**
	Tyres	**Type**	**Make**	**4-A**	**4-B**
●	**13.6R28**	W 12-28	a ou b	**1779**	1979
	14.9R28	W 12-28	a ou b	**1778**	1978
▲	**16.9R28**	W 15L-28	a	**1725**	2025
▲	**16.9R28**	W 15L-28	b	**1805**	1949
●	**340/85R28**	W 12-28	a ou b	**1779**	1979
●	**380/70R28**	W 12-28	a ou b	**1779**	1979
	380/85R28	W 12-28	a ou b	**1778**	1978
	420/70R28	W 12-28	a ou b	**1778**	1978
▲	**420/85R28**	W 15L-28	a	**1725**	2025
▲	**420/85R28**	W 15L-28	b	**1805**	1949
●	**440/65R28**	W 12-28	a ou b	**1779**	1979
●	**480/60R28**	W 16L-28		**1801**	1961
	480/65R28	W 12-28	a ou b	**1778**	1978
▲	**480/70R28**	W 15L-28	a	**1725**	2025
▲	**480/70R28**	W 15L-28	b	**1805**	1949
	520/60R28	W 18L-28		**1800**	1960
▲	**540/65R28**	W 15L-28	a	**1725**	2025
▲	**540/65R28**	W 15L-28	b	**1805**	1949

▲ Except Ares 616
● Except Ares 656

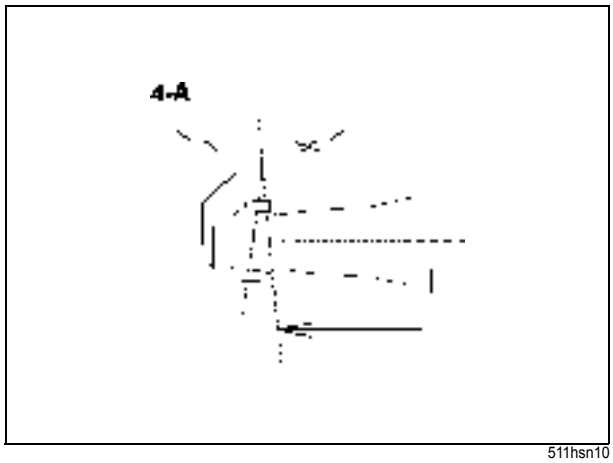
a: Titan France.
b: Titan Italy or Titan.
Delivery track in bold.

TABLES OF FRONT TRACKS

Type of front axle: A 88-3				
ARES 696 Normal front axle				
Rims with fixed wheel disc			**Minimum track (in mm)**	**Maximum track (in mm)**
Tyres	**Type**	**Make**	**4-A**	**4-B**
14.9R28	W 12-28	a ou b	1698	**1962**
16.9R28	W 15L-28	a ou b	1697	**1961**
380/85R28	W 12-28	a ou b	1698	**1962**
420/70R28	W 12-28	a ou b	1698	**1962**
420/85R28	W 15L-28	a ou b	1697	**1961**
480/65R28	W 12-28	a ou b	1698	**1962**
480/70R28	W 15L-28	a ou b	1696	**1960**
520/60R28	W 18L-28		1750	**1910**
540/65R28	W 15L-28	a ou b	1696	**1960**

Type of front axle: A 2019-10 SI					
ARES range 506-606 PROACTIV Front Axle					
Rims with fixed wheel disc				**Minimum track (in mm)**	**Maximum track (in mm)**
	Tyres	**Type**	**Make**	**4-A**	**4-B**
▲	**11.2R28**	W 10-28	b	**1751**	2011
▲	**12.4R28**	W 10-28	b	**1750**	2010
	13.6R28	W 12-28	b	**1749**	2009
	14.9R28	W 12-28	b	**1748**	2008
●	**16.9R28**	W 15L-28	a ou b	**1747**	2011
▲	**280/85R28**	W 10-28	b	**1751**	2011
▲	**320/70R28**	W 10-28	b	**1751**	2011
▲	**320/85R28**	W 10-28	b	**1750**	2010
	340/85R28	W 12-28	b	**1749**	2009
▲	**360/70R28**	W 10-28	b	**1751**	2011
▲	**380/70R28**	W 12-28	b	**1749**	2009
	380/85R28	W 12-28	b	**1748**	2008
▲	**420/65R28**	W 10-28	b	**1751**	2011
	420/70R28	W 12-28	b	**1748**	2008
●	**420/85R28**	W 15L-28	a ou b	**1747**	2011
▲	**440/65R28**	W 12-28	b	**1749**	2009
■	**480/60R28**	W 16L-28		**1801**	1961
	480/65R28	W 12-28	b	**1748**	2008
●	**480/70R28**	W 15L-28	a ou b	**1746**	2010
●	**520/60R28**	W 18L-28		**1800**	1960
●	**540/65R28**	W 15L-28	a ou b	**1746**	2010

▲ Only on series 506
● Only on series 606
■ Except Ares 656 and 696



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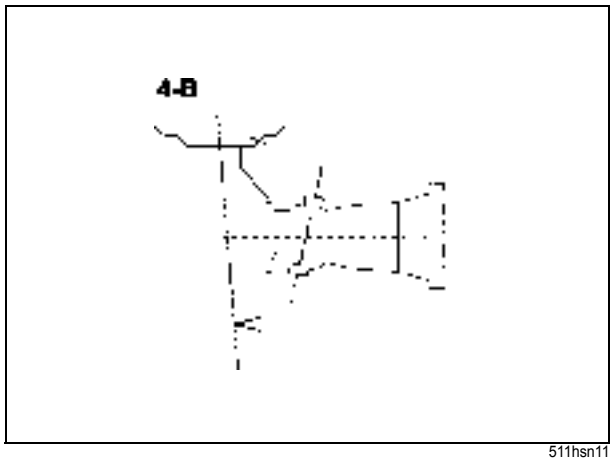

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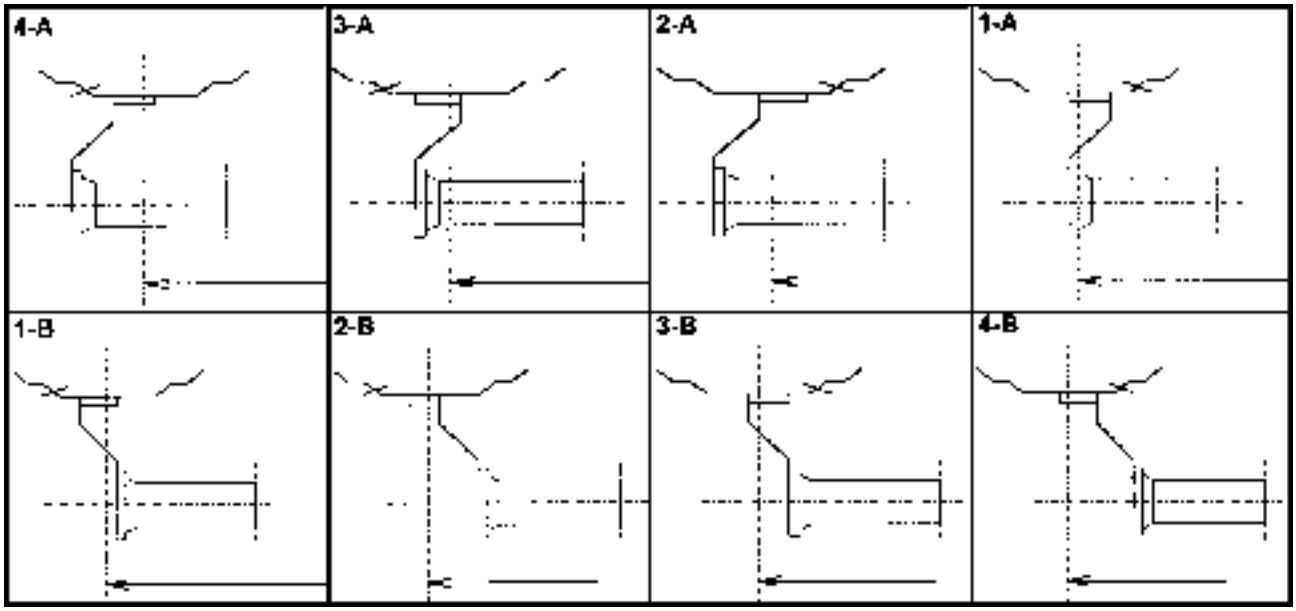
TABLES OF REAR TRACKS



511hsn12

Type of rear axle: GPA 22

ARES 546-556

Rims with connector bars or welded circle

Rear tracks (in mm)

	Tyres	Type	Make	4-A	3-A	2-A	1-A	1-B	2-B	3-B	4-B
	13.6R38	DW 12-38	a		1689	1585	**1789**	**1785**	1989	1885	2089
▲	**16.9R34**	DW 15L-34	a		1635		1735	**1835**	2035	1935	2135
▲	**16.9R34**	DW 15L-34	b			1630	1747	**1826**	1944	2030	2147
	16.9R38	DW 15L-38	a		1639		1739	**1835**	2039	1935	2139
	16.9R38	DW 15L-38	b		1639		1739	**1835**	2039	1935	2139
	18.4R34	DW 15L-34	a				1735	**1835**	2035	1935	2135
	18.4R34	DW 15L-34	b				1747	**1826**	1944	2030	2147
●	**18.4R38**	DW 15L-38	a				1739	**1835**	2039	1935	2139
●	**18.4R38**	DW 15L-38	b				1739	**1835**	2039	1935	2139
	340/85R38	DW 12-38	a		1689	1585	**1789**	**1785**	1989	1885	2089
▲	**420/85R34**	DW 15L-34	a				1735	**1835**	2035	1935	2135
▲	**420/85R34**	DW 15L-34	b				1747	**1826**	1944	2030	2147
	460/85R34	DW 15L-34	a					**1835**	2035	1935	2135
	460/85R34	DW 15L-34	b					**1826**	1944	2030	2147
▲	**480/70R34**	DW 15L-34	a		1635		1735	**1835**	2035	1935	2135
▲	**480/70R34**	DW 15L-34	b			1630	1747	**1826**	1944	2030	2147
	520/70R34	DW 15L-34	a				1735	**1835**	2035	1935	2135
	520/70R34	DW 15L-34	b				1747	**1826**	1944	2030	2147
▲	**540/65R34**	DW 15L-34	a				1735	**1835**	2035	1935	2135
▲	**540/65R34**	DW 15L-34	b				1747	**1826**	1944	2030	2147
	420/85R38	DW 15L-38	a				1739	**1835**	2039	1935	2139
	420/85R38	DW 15L-38	b				1739	**1835**	2039	1935	2139
●	**460/85R38**	DW 15L-38	a		1639		1739	**1835**	2039	1935	2139
●	**460/85R38**	DW 15L-38	b		1639		1739	**1835**	2039	1935	2139
	480/70R38	DW 15L-38	a		1639		1739	**1835**	2039	1935	2139
	480/70R38	DW 15L-38	b		1639		1739	**1835**	2039	1935	2139
●	**520/70R38**	DW 18L-38	a				**1789**	**1785**	1989	1885	2089
	540/65R38	DW 15L-38	a				1739	**1835**	2039	1935	2139
	540/65R38	DW 15L-38	b				1739	**1835**	2039	1935	2139
●	**600/65R38**	DW 18L-38	a				**1789**	**1785**	1989	1885	2089

▲ Only ARES 546

● Only ARES 556

a: Titan France.
b: Titan Italy or Titan.

Delivery track in bold.

TABLES OF REAR TRACKS

Type of rear axle: GPA 22 and 22+											
ARES 566-616-656											
Rims with connector bars or welded circle											
Rear tracks (in mm)											
	Tyres	**Type**	**Make**	**4-A**	**3-A**	**2-A**	**1-A**	**1-B**	**2-B**	**3-B**	**4-B**
▲	**16.9R38**	DW 15L-38	a		1639		1739	**1835**	2039	1935	2139
▲	**16.9R38**	DW 15L-38	b		1639		1739	**1835**	2039	1935	2139
	18.4R38	DW 15L-38	a		1639		1739	**1835**	2039	1935	2139
	18.4R38	DW 15L-38	b		1639		1739	**1835**	2039	1935	2139
●	**20.8R38**	DW 18L-38	a		1641		1741	**1835**	2041	1935	2141
●	**20.8R38**	DW 18L-38	b		1641		1741	**1835**	2041	1935	2141
▲	**420/85R38**	DW 15L-38	a				1739	**1835**	2039	1935	2139
▲	**420/85R38**	DW 15L-38	b				1739	**1835**	2039	1935	2139
	460/85R38	DW 15L-38	a		1639		1739	**1835**	2039	1935	2139
	460/85R38	DW 15L-38	b		1639		1739	**1835**	2039	1935	2139
▲	**480/70R38**	DW 15L-38	a		1639		1739	**1835**	2039	1935	2139
▲	**480/70R38**	DW 15L-38	b		1639		1739	**1835**	2039	1935	2139
▲	**520/70R38**	DW 18L-38	a				**1789**	**1785**	1989	1885	2089
●	**520/70R38**	DW 18L-38	a				1741	**1835**	2041	1935	2141
●	**520/70R38**	DW 18L-38	b				1741	**1835**	2041	1935	2141
●	**520/85R38**	DW 18L-38	a		1641		1741	**1835**	2041	1935	2141
●	**520/85R38**	DW 18L-38	b		1641		1741	**1835**	2041	1935	2141
▲	**540/65R38**	DW 15L-38	a				1739	**1835**	2039	1935	2139
▲	**540/65R38**	DW 15L-38	b				1739	**1835**	2039	1935	2139
●	**580/70R38**	DW 18L-38	a				1741	**1835**	2041	1935	2141
●	**580/70R38**	DW 18L-38	b				1741	**1835**	2041	1935	2141
▲	**600/65R38**	DW 18L-38	a				**1789**	**1785**	1989	1885	2089
●	**600/65R38**	DW 18L-38	a				1741	**1835**	2041	1935	2141
●	**600/65R38**	DW 18L-38	b				1741	**1835**	2041	1935	2141
●	**650/65R38**	DW 18L-38	a				1741	**1835**	2041	1935	2141
●	**650/65R38**	DW 18L-38	b				1741	**1835**	2041	1935	2141

▲ Only ARES 566 and 616

● Only ARES 656

Type of rear axle: GPA 23										
ARES 696										
Rims with connector bars or welded circle										
Rear tracks (in mm)										
Tyres	**Type**	**Make**	**4-A**	**3-A**	**2-A**	**1-A**	**1-B**	**2-B**	**3-B**	**4-B**
18.4R38	DW 15L-38	a		1699		**1799**	1895	2099	1995	2199
18.4R38	DW 15L-38	b		1699		**1799**	1895	2099	1995	2199
20.8R38	DW 18L-38	a				**1801**	1895	2101	1995	2201
20.8R38	DW 18L-38	b				**1801**	1895	2101	1995	2201
460/85R38	DW 15L-38	a		1699		**1799**	1895	2099	1995	2199
460/85R38	DW 15L-38	b		1699		**1799**	1895	2099	1995	2199
520/70R38	DW 18L-38	a		1701		**1801**	1895	2101	1995	2201
520/70R38	DW 18L-38	b		1701		**1801**	1895	2101	1995	2201
520/85R38	DW 18L-38	a		1701		**1801**	1895	2101	1995	2201
520/85R38	DW 18L-38	b		1701		**1801**	1895	2101	1995	2201
580/70R38	DW 18L-38	a				**1801**	1895	2101	1995	2201
580/70R38	DW 18L-38	b				**1801**	1895	2101	1995	2201
600/65R38	DW 18L-38	a				**1801**	1895	2101	1995	2201
600/65R38	DW 18L-38	b				**1801**	1895	2101	1995	2201
650/65R38	DW 18L-38	a				**1801**	1895	2101	1995	2201
650/65R38	DW 18L-38	b				**1801**	1895	2101	1995	2201

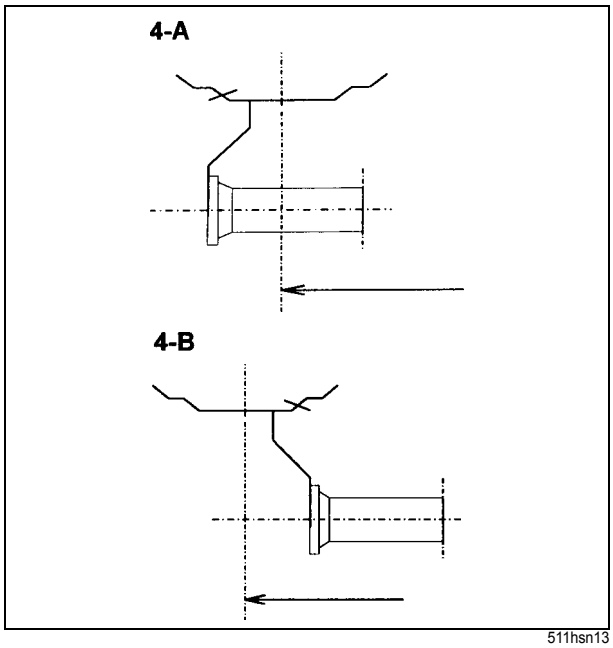
a: Titan France.
b: Titan Italy or Titan.

Delivery track in bold.

TABLES OF REAR TRACKS

Type of front axle: GPA 22					
ARES 546-556-566-616-656					
Rims with fixed wheel disc				**Minimum track (in mm)**	**Maximum track (in mm)**
	Tyres	**Type**	**Make**	**4-A**	**4-B**
	16.9R34	DWW 15L-34	a		**2025**
	16.9R34	DWW 15L-34	b		**2023**
●	**18.4R34**	DWW 15L-34	a		**2025**
●	**18.4R34**	DWW 15L-34	b		**2023**
	13.6R34	DWW 12-38	b	1715	**1859**
	16.9R38	DWW 15L-38	b	1715	**1859**
▲	**18.4R38**	DWW 15L-38	b	1715	**1859**
	420/85R34	DWW 15L-34	a		**2025**
	420/85R34	DWW 15L-34	b		**2023**
●	**460/85R34**	DWW 15L-34	a		**2025**
●	**460/85R34**	DWW 15L-34	b		**2023**
	480/70R34	DWW 15L-34	a		**2025**
	480/70R34	DWW 15L-34	b		**2023**
●	**520/70R34**	DWW 15L-34	a		**2025**
●	**520/70R34**	DWW 15L-34	b		**2023**
	540/65R34	DWW 15L-34	a		**2025**
	540/65R34	DWW 15L-34	b		**2023**
●	**600/65R34**	DWW 15L-34	b		**2025**
●	**600/65R34**	DWW 15L-34	b		**2023**
	340/85R38	DWW 12-38	b	1715	**1859**
	420/85R38	DWW 15L-38	b	1715	**1859**
▲	**460/85R38**	DWW 15L-38	b	1715	**1859**
	480/70R38	DWW 15L-38	b	1715	**1859**
▲	**520/70R38**	DWW 18L-38	b		**1859**
	540/65R38	DWW 15L-38	b	1715	**1859**
■	**600/60R38**	DWW 20A-38		1749	**1824**
▲	**600/65R38**	DWW 18L-38	b		**1859**
◆	**650/60R38**	DWW 23A-38			**1830**

▲ Except Ares 546
● Except Ares 626
▲ Except Ares 656
◆ Only ARES 616 and 656



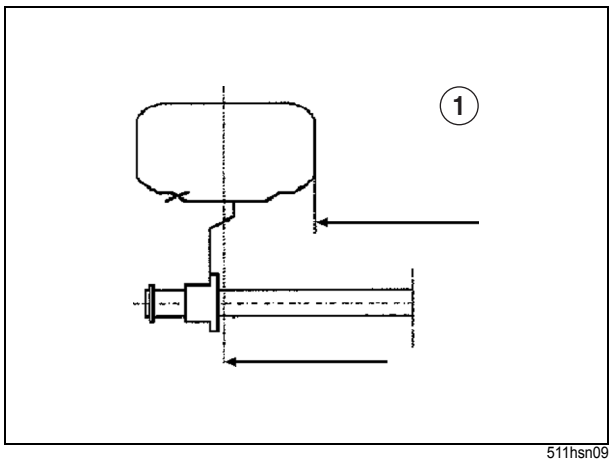
511hsn13

Type of rear axle: GPA 23				
ARES 696				
Rims with fixed wheel disc			**Minimum track (in mm)**	**Maximum track (in mm)**
Tyres	**Type**	**Make**	**4-A**	**4-B**
20.8R38	DW 18L-38	a ou b	1775	**1919**
520/70R38	DW 18L-38	a ou b	1775	**1919**
520/85R38	DW 18L-38	a ou b	1775	**1919**
580/70R38	DW 18L-38	a ou b	1775	**1919**
600/65R38	DW 18L-38	a ou b		**1919**
650/60R38	DWW 23A-38			**1891**
650/65R38	DW 18L-38	a ou b		**1919**

a: Titan France.
b: Titan Italy or Titan.

Delivery track in bold.

TABLES OF REAR TRACKS



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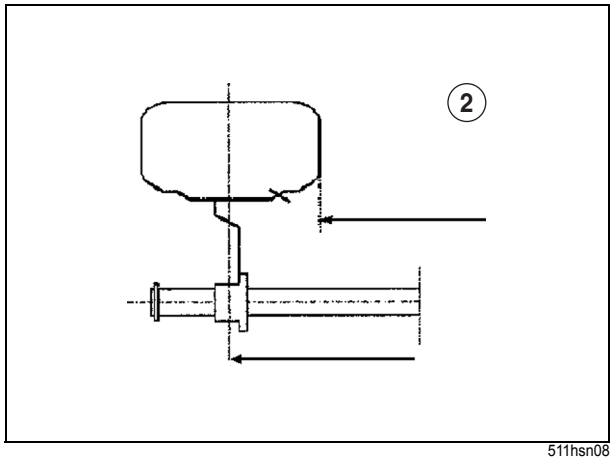


511hsn08

Type of rear axle: GPA 23 Smooth shafts								
ARES 696								
Rims with fixed wheel disc								
Rear tracks (in mm)								
			Position 1			**Position 2**		
Tyres	**Type**	**Make**	**Minimum**	**Delivery**	**Maximum**	**Minimum**	**Delivery**	**Maximum**
18.4R38	DWW 15L-38	b			1755		**1800**	2090
20.8R38	DWW 18L-38	b	1683	**1800**	2051	1831	**1800**	2185
460/85R38	DWW 15L-38	b			1755		**1800**	2090
520/70R38	DWW 18L-38	b		**1800**	2051	1831	**1800**	2185
520/85R38	DWW 18L-38	b	1683	**1800**	2051	1831	**1800**	2185
580/70R38	DWW 18L-38	b		**1800**	2051	1831	**1800**	2185
600/65R38	DWW 18L-38	b		**1800**	2051	1831	**1800**	2185
650/60R38	DWW 23A-38				1807		**1900**	2038
650/65R38	DWW 18L-38	b		**1800**	2051	1831	**1800**	2185

Tyre combinations							
Front	**Rear**	**546**	**556**	**566**	**616**	**656**	**696**
13,6 R 24 or 340/85 R 24	16,9 R 34 or 420/85 R 34	X					
14,9 R 24 or 380/85 R 24	18,4 R 34 or 460/85 R 34	X	X				
11,2 R 28 or 280/85 R 28	13,6 R 38 or 340/85 R 38	X	X				
13,6 R 28 or 340/85 R 28	16,9 R 38 or 420/85 R 38	X	X	X	X		
14,9 R 28 or 380/85 R 28	18,4 R 38 or 460/85 R 38		X	X	X	X	X
16,9 R 28 or 420/85 R 28	20,8 R 38 or 520/85 R 38					X	X
380/70 R 24	480/70 R 34	X					
420/70 R 24	520/70 R 34	X	X				
440/65 R 24	540/65 R 34	X					
380/70 R 28	480/70 R 38	X	X	X	X		
420/70 R 28	520/70 R 38		X	X	X	X	X
440/65 R 28	540/65 R 38	X	X	X	X		
480/65 R 28	600/65 R 38		X	X	X	X	X
480/70 R 28	580/70 R 38					X	X
540/65 R 28	650/65 R 38					X	X

a: Titan France.
b: Titan Italy or Titan.

Delivery track in bold.

SETTING THE TRACK

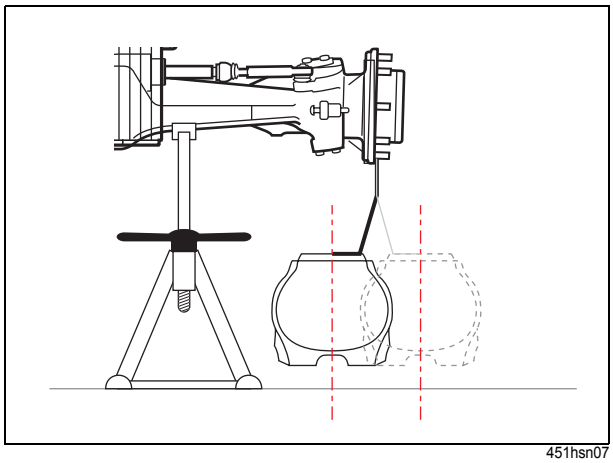
Use of axle stands

Carry out this operation on a smooth horizontal and sufficiently firm surface.

Check the axle stands are suitable for the load.

For this operation, check the tractor's front and rear weights in chapter "K".

4-wheel drive tractor: If the rear axle is on stands, do not start the engine. (Otherwise the tractor could move). If the engine has to be started, the front axle must also be supported on axle stands.



451hsn07

When adjusting the track, take all the necessary precautions while lifting the front axle to avoid all risk of anyone being crushed.

After 10 hours operation, check the tightness of the wheel attachment nuts (see chapter "L")

The different tracks are obtained either by:

- Reverse the wheel disks.
- Swap over the wheels.
- Fitting the disc on the outside or inside of the connector bar.
- Sliding the wheel hub on the smooth shaft

TRACKING METHOD

- Identify the type and make of the rim (1) or (2) (e.g. : W15-38 Titan France).
- Measure the track on the ground.
- Place the front or rear axle on stands.
- Remove the front or rear wheels.
- Position the wheel discs and rims to obtain the desired working track (see table of tracks).
- Tighten the screws and nuts of the wheel disc on the rim.
- Tighten the wheel cover nuts on the wheel shaft.

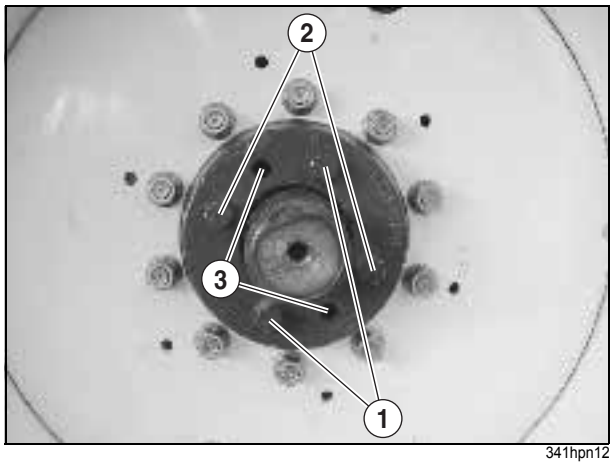
For tightening torques, refer to chapter "L".

511hsn15

511hsn16

ADJUSTING THE TRACK WITH SMOOTH SHAFT REAR AXLE (ARES 696)

- Raise the rear of the tractor to free the wheels and chock the tractor in position.
- Loosen 2 attachment screws opposite (1) the hub by about 3 turns.
- Completely unscrew the 2 other screws opposite (2).
- Screw these 2 screws M20 into the threaded holes (3) and tighten them alternately until disengagement from the fixed hub is obtained.
- Position the wheel on the smooth shaft to obtain the desired track respecting the minimum and maximum values indicated in the table of tracks.
- Remove the 2 screws from the holes (3) and place them back in the holes (2).
- Then tighten the 4 screws M20 at a torque of 70 daN.m.



341hpn12

FRONT AXLE STEERING LOCK STOPS

The steering lock stops (5) are adjusted during initial assembly. Check regularly that there is no interference between the tyre and the tractor.

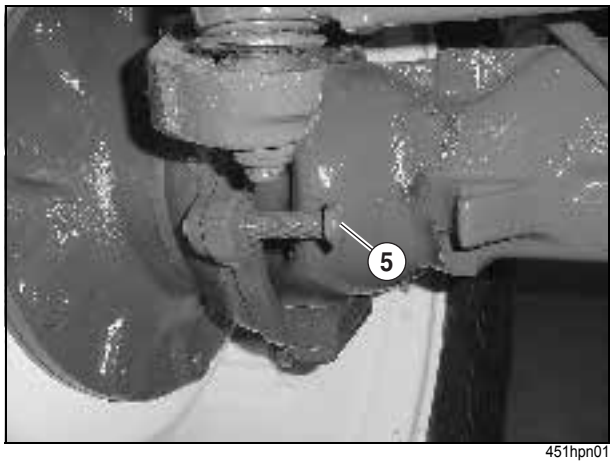
CHECK

- Lift the front of the tractor using a jack.
- Set the wheels to full right lock and swing the axle to its limits in both directions.
- Check that there is a distance of 50 mm between the tyre and the closest point of the tractor.
- Carry out the same check on left lock.
- If the tyre/ tractor distance is different from 50 mm, adjust the stops.

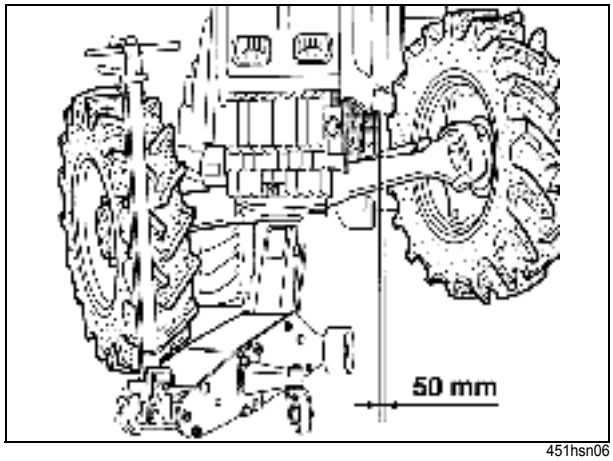
ADJUSTMENT

- Unblock each counter nut (1). Unscrew the stops (2) until there is 50 mm clearance between the tyres and the tractor ;
- Tighten up the counter nuts (1).

Important: When there is a tyre change or a change of track, always check the 50 mm clearance.



451hpn01



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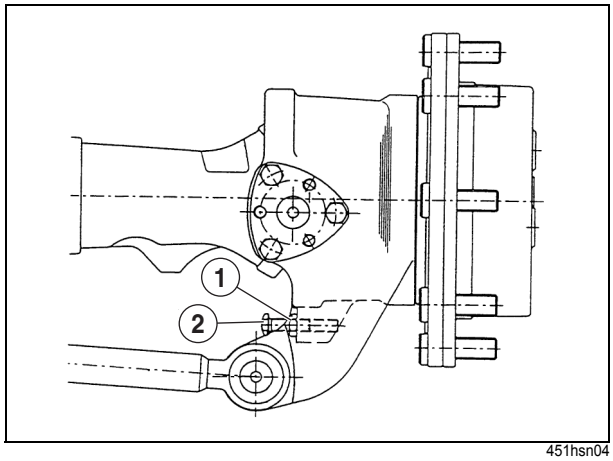
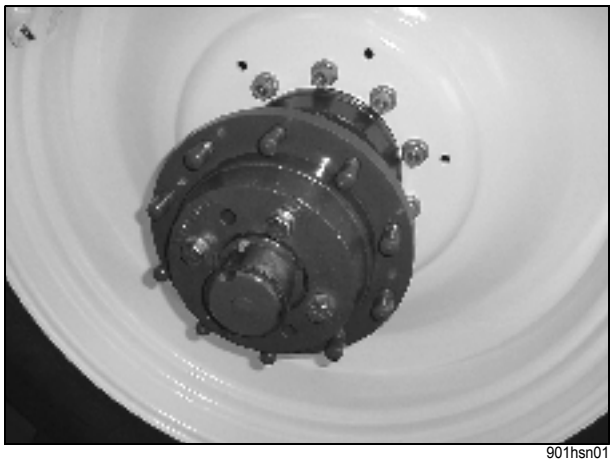


451hsn04

DUAL WHEELS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- Dual front or rear wheels can be used for reducing soil compaction during surface work.
- Tractor ballasting must not exceed the values shown in chapter "K".
- Tyre pressures must the minimum shown by the manufacturer.
- Working speed when using dual wheels is usually fairly fast; nevertheless, if you have to work at less than 6 km/h carry out the preliminary testing shown below.

Important:
Front dualling: When dualled front wheels of the tractor are fitted, adjust the steering stops before using the tractor (they may touch). To do this, refer to the steering stop adjustment procedure in this chapter.

PRELIMINARY TESTING

- Choose a gear which allows a forward speed of at least 6 km/h at rated engine speed.
- Adjust forward speed by reducing engine speed but without dropping below 1 500 rpm.
- Adjust the working depth using the TCE lift.
- If the work can be carried out in these conditions (stable engine speed and acceptable wheel spin), choose a ratio which allows working at the required forward speed for an engine speed between 1 800 rpm and the rated speed.
- If the work cannot be carried out (engine stalls or excessive wheel slip) reduce the implement's resistive effort by reducing the depth or width of working.

USING DEEP-WORKING IMPLEMENTS

Subsoilers,subsoilers and ditchers and trench ploughs always work at great depth.

Their design requires great tractive effort and often causes considerable overloading which in the long term can damage your tractor.

To use your tractor normally:

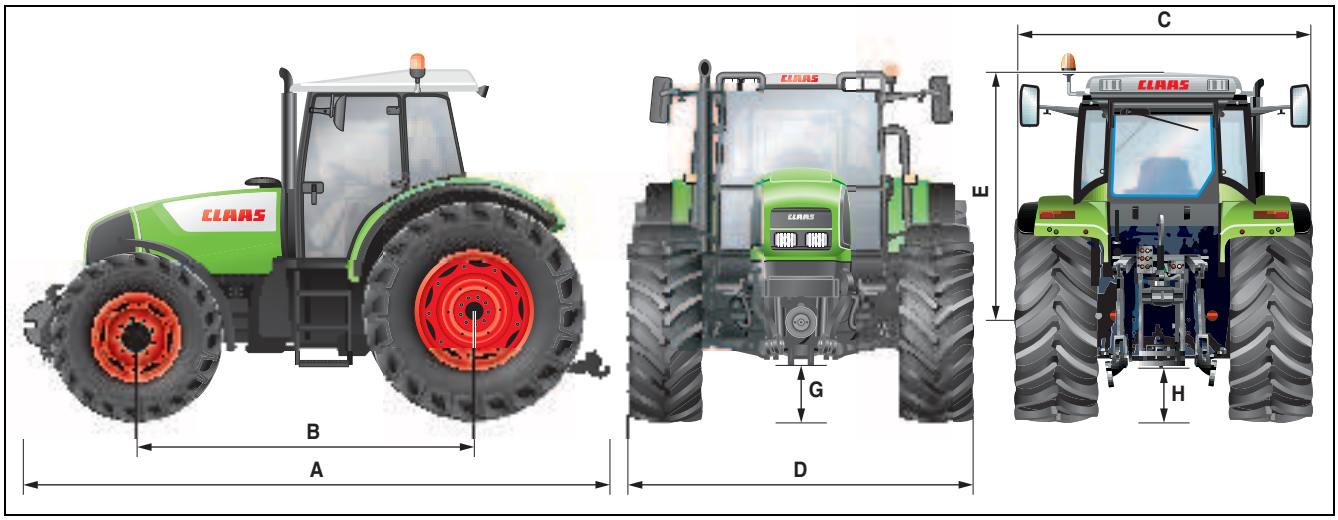
- Tractor ballasting must not exceed the values shown in chapter "K".
- Tyre pressures must match those shown by the manufacturers for the load being carried.
- If you have to work at less than 6 km/h carry out a preliminary test.

Notes

K - DIMENSIONS, WEIGHTS, CAPACITIES AND BALLAST

DIMENSIONS AND WEIGHTS

These values are given with standard tyres, with all the systems full and with the support and additional weights.



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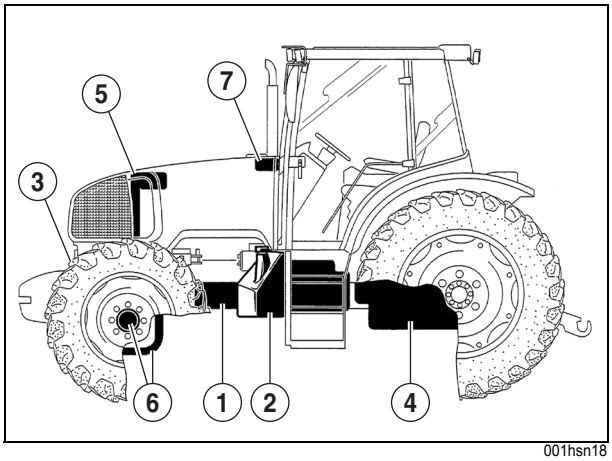
DIMENSIONS (in mm)/Weight (in kg)	ARES 546	ARES 556	ARES 566
Front tires (basic mount) Rear tyres (basic mount)	13.6 R 24 16.9 R 34	13.6 R 28 16.9 R 38	13.6 R 28 16.9 R 38
Overall length with front weights and rear hitch (A)	4679		
Wheel base (B)	2564		
Overall width with/without rear wing expanders (C)	2569/2140		
Overall maximum width front/rear with basic mount (D)	2124/2147	2182/2139	
Vertical distance from rear axle hub to top of cab RX and RZ (E)	2070		
Ground clearance under the fixed front axle (G)	425	475	
Ground clearance under the front axle PROACTIV (G)	385		
Ground clearance under the rear axle (H)	432	482	
Weight with a fixed front axle cab RX/RZ	5065/5165	5260/5362	5380/5500
Weight with a PROACTIV front axle cab RZ	5280	5528	5593
Front/rear weight distribution cab RX (with fixed front axle)	2400/2665	2610/2648	2780/2600
Front/rear weight distribution cab RZ (with fixed front axle)	2400/2765	2600/2762	2780/2720
Front/rear weight distribution cab RZ (with PROACTIV front axle)	2400/2840	2723/2805	2810/2783
Maximum slope allowed while working	22,5°		

DIMENSIONS (in mm)/Weight (in kg)	ARES 616	ARES 656	ARES 696
Front tires (basic mount) Rear tyres (basic mount)	14.9 R 28 18.4 R 38	14.9 R 28 18.4 R 38	16.9 R 28 20.8 R 38
Overall length with front weights and rear hitch (A)	4935	5175	
Wheel base (B)	2820		
Overall width with/without rear wing expanders (C)	2569/2140		
Overall maximum width front/rear with basic mount (D)	2181/2139		2060/2201
Vertical distance from rear axle hub to top of cab RX and RZ (E)	2120		
Ground clearance under the fixed front axle (G)	505		540
Ground clearance under the front axle PROACTIV (G)	415		445
Ground clearance under the rear axle (H)	507		542
Weight with a fixed front axle cab RX/RZ	5660/5740	-/5965	-/6690
Weight with a PROACTIV front axle cab RZ	5835	6030	6724
Front/rear weight distribution cab RX (with fixed front axle)	2870/2790	-	-
Front/rear weight distribution cab RZ (with fixed front axle)	2870/2870	3225/2740	3570/3120
Front/rear weight distribution cab RZ (with PROACTIV front axle)	2905/2930	3255/2775	3534/3190
Maximum slope allowed while working	22,5°		

CAPACITIES

The table below indicates the quantities of lubricant and fluid to be used in each component.
Only use recommended lubricants and fluids.
When topping up, the oil or fluid category must not be changed.
Regular oil changes are essential.



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	TRACTOR COMPONENTS	Capacities		RECOMMENDED LUBRICANTS/FLUIDS
		Min	Max	
1	ENGINE Engine sump 4 cylinders Engine sump 6 cylinders	10 L 14 L	12,5 L 17 L	CLAAS Engine Top (SAE 15W40 - ACEA E3/E5/A3/B3/B4 - API CH-4/CI-4) or ELF Tractorenault SDX (SAE 15W40 - ACEA E5 - API CH-4)
2	FUEL TANK 546 - 556 - 566 616 - 656 - 696	170 L 250 L		Diesel quality (see chapter D)
3	FRONT POWER TAKE-OFF BOX	1,3 L		ELF Tractorenault GA12 (API GL4 - GIMA M 1143 - ISO HV68)
4	TRANSMISSION - LINKAGE 546 - 556 - 566 636 - 656 - 696 (with smooth wheel shafts)	65 L 65 L		ELF Tractorenault GA12 (API GL4 - GIMA M 1143 - ISO HV68)
5	RADIATOR	22 L		Coolant: ELF Glaceol RX GF (type D ; -37°C)
6	RIGID FRONT AXLE differential housing Final drive (except 696) Final drive (for 696) SUSPENDED FRONT AXLE differential housing Final drive	6 L 2 x 0,6 L 2 x 1,5 L 5,5 L 2 x 1,5 L		TRANSELF BLS 90 (API GL5 - MILL.L. 2105 D) Extreme pressure oil to lubricate differential axles with limited slip or self-locking axles
7	BRAKING CIRCUIT	0,9 L		Brake fluid type ELF LHM
	GREASE NIPPLES			General purpose grease CLAAS EP 2 or ELF Multi

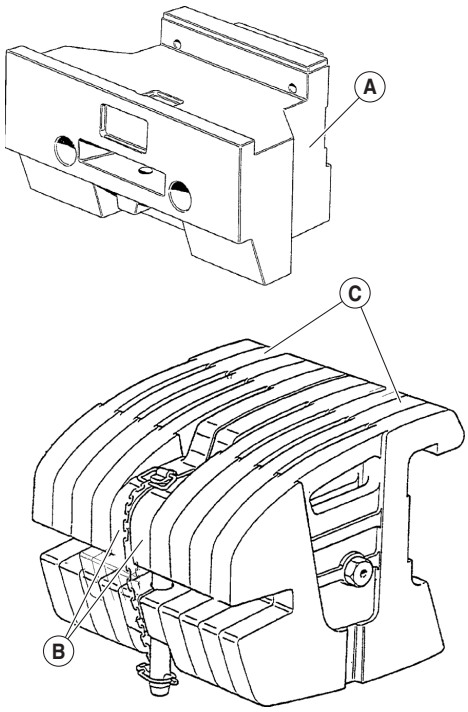
BALLASTS

BALLAST ON THE FRONT OF THE TRACTOR

When they leave the production line, tractors are ballasted to behave normally in most operating situations. However, depending on working conditions, the ballast can be changed.

Important: Only alter the original ballast once you are sure that the attachment instructions have been fully observed.

TRACTORS WITHOUT FRONT LINKAGE			
Basic ballast and optional ballast		**Normal front axle (in kg)**	**PROACTIV Front Axle (in kg)**
ARES 546			
A - 1 basic weight of 300 kg		300	300
B - 2 central weights of 36 kg		72	
C - 4 additional weights of 34 kg		136	
	Maximum total	508	300
ARES 556			
A - 1 basic weight of 300 kg		300	300
B - 2 central weights of 36 kg		72	72
C - 8 or 4 additional weights of 34 kg		272	136
	Maximum total	644	508
ARES 566			
A - 1 basic weight of 300 kg		300	300
B - 2 central weights of 36 kg		72	72
C - 12 or 6 additional weights of 34 kg		408	204
	Maximum total	780	576
ARES 616			
A - 1 basic weight of 300 kg		300	300
B - 2 central weights of 36 kg		72	72
C - 12 or 6 additional weights of 34 kg		408	204
	Maximum total	780	576
ARES 656			
A - 1 basic weight of 565 kg		565	565
B - 2 central weights of 36 kg		72	72
C - 12 or 6 additional weights of 34 kg		408	204
	Maximum total	1045	841
ARES 696			
A - 1 basic weight of 565 kg		565	565
B - 2 central weights of 36 kg		72	72
C - 16 or 10 additional weights of 34 kg		544	340
	Maximum total	1181	977
TRACTORS WITH FRONT LINKAGE			
ARES 500 RANGE			
Weight carrier triangle (D)		110	110
Basic weight (E)		300	300
	Maximum total	410	410
ARES 616-656 RANGE			
Weight carrier triangle (D)		110	110
Basic weight (E)		300	300
	Maximum total	410	410
ARES 696 RANGE			
Weight carrier triangle (D)		110	110
Basic weight (E)		565	565
	Maximum total	675	675



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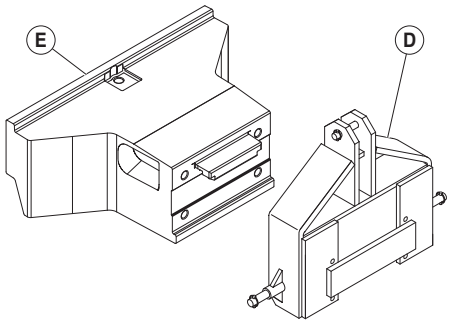

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Important: The use of a front bucket requires ballast on the rear drawbar of the tractor. Use a counter load of 900 to 1500 kg depending on the loader used. Do not ballast the front of the tractor. Refer to your approved CLAAS repair agent.

L - MAINTENANCE

GENERAL

ADVICE

Only regular meticulous maintenance can guarantee the correct operation of your tractor. Follow all the instructions given in this manual.

CLAAS declines all responsibility if maintenance instructions are not followed.

GENERAL CLEANING

Generally clean and inspect, in detail, the tractor whenever necessary. This will enable incipient problems to be detected and inconvenient incidents avoided.

Important: Never spray cold water onto the injector pump with the engine running: The hydraulic head may seize up.

HIGH-PRESSURE CLEANING SYSTEMS

High-pressure cleaning systems are highly effective but, when using them, always take care not to damage the lip seals that protect the tractor's mechanical components. Also avoid directly spraying electrical harness connectors.

ROUTINE MAINTENANCE

The user may perform certain maintenance tasks that do not require specific technical skills, in particular periodic maintenance operations, provided that the frequency and instructions in this manual are respected.

TOUCHING UP PAINTWORK

If bare metal can be seen, the paintwork should be touched up to avoid corrosion. Your CLAAS agent can supply aerosol cans to match the colour of your tractor.

WELDING

All forms of electric welding (spot or arc) can damage your tractor's electrical and electronic equipment. You are therefore strongly advised not to carry out any welding on the tractor (or even on a tool coupled to the tractor).

Important: If electric welding is required on the tractor, call your approved CLAAS agent.

FAILURES OR MALFUNCTIONS

- If the tractor suffers a failure.
- or a malfunction.
- or makes an abnormal noise.

call your CLAAS agent. He alone has the skills needed to correctly repair your tractor. You should also contact him if simple adjustments you carry out yourself do not give the desired results.

DECREASE IN FLUID LEVEL

If the level of a fluid (oil, coolant etc.) decreases, top up as described in the section "Maintenance Operation". If the gauge remains in the red zone, or if the level drops again, contact your CLAAS approved repairer.

QUANTITY AND TYPE OF OIL

For maintenance operations requiring an oil change (see chapter "K").

GREASE QUALITY

For maintenance operations requiring greasing (see chapter "K").

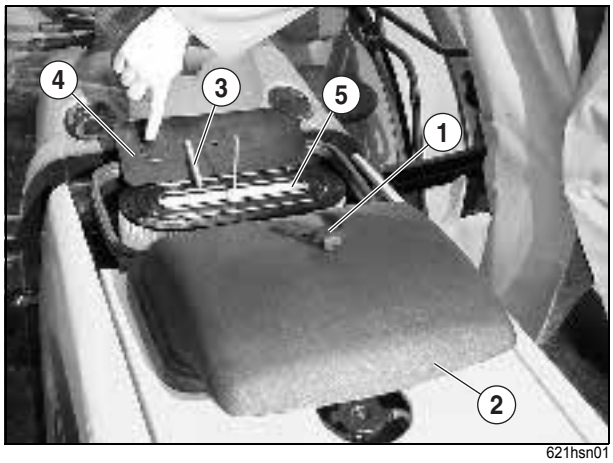
Frequency	Operation n°	Maintenance operations	Grease	Cleaning	Check	Replace	page n°
As required	1	Cab air filter			X		L.4
	2	Windscreen washer fluid level		X			L.4
	3	Diesel fuel filter			X		L.4
	4	Engine air filter			X		L.5
Every 10 h Operations 1 to 11	5	Engine oil level		X			L.6
	6	Elimination of water in the fuel			X		L.6
	7	Coolant level		X			L.7
	8	Service brake fluid level		X			L.7
	9	Bleed air from the pneumatic braking		X			L.8
	10	Pneumatic braking connector		X		X	L.8
	11	Hydraulic /transmission oil level		X			L.8
Every 50 h Operations 1 to 19	12	Radiator grille			X		L.9
	13	Coolers			X		L.9
	14	Air conditioning compressor				X	L.11
	15	Front axle swing bearings				X	L.11
	16	Proactiv front axle		X		X	L.11
	17	Rear linkage				X	L.12
	18	Front linkage				X	L.12
	19	Front power take-off box oil level		X			L.13
Every 100 h Operations 1 to 25	20	Front axle final drive oil level		X			L.13
	21	Front axle differential sump oil level		X			L.13
	22	Rigid front axle wheel pins				X	L.14
	23	Wheel disc and rim nuts		X			L.14
	24	Tyre inflation pressure		X			L.14
	25	Front weight attachment bolts		X			L.14
Every 500 h Operations 1 to 35	26	Cab "recycled" air filter	X	X			L.15
	27	Front power take-off box oil	X				L.15
	28	Battery terminals			X	X	L.15
	29	Engine oil	X				L.16
	30	Diesel filter cartridge	X				L.16
	31	Engine oil filter cartridge	X				L.17
	32	Belts	X	X			L.18
	33	Front axle final drive oil	X				L.19
	34	Hydraulic/transmission system filter cartridges	X				L.19
	35	Hand brake clearance		X			L.20
Every 1000 h Operations 1 to 42	36	Wheel hubs				X	L.21
	37	Front axle differential sump oil	X				L.21
	38	Front axle breather	X				L.22
	39	Hydraulic/transmission oil	X				L.22
	40	Rear axle breather	X				L.22
	41	Hydraulic strainer	X				L.23
	42	Engine air filters	X				L.24
Every 2000 h Operations 1 to 45	43	Main cab air filter	X				L.25
	44	Diesel fuel filter	X				L.25
	45	Engine maintenance	X	X			L.25
		Rocker arms and injectors	X	X			L.25
		Thermostat and cooling circuit fluid	X				L.25
		Hydraulic system accumulator		X			L.25
Every 2000 h or every 2 years*	46	Brake circuit fluid	X				L.26
Every 3 years	47	Air conditioning dehumidifier and cab shock absorbers	X				L.26

** Whichever comes first.*

Operation n° 1

CAB AIR FILTER: CLEANING

- Undo nut (1).
- Remove air manifold (2), spring (3), plate (4) and air filter (5).
- If necessary, clean with compressed air (pressure lower than 5 bar) blowing from the clean side to the blocked side.
- Refit parts (4), (3), (2) and (1).
- To ensure correct assembly of plate (4), place the centre marker to be found under this plate on the air filter side.



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Operation n° 2

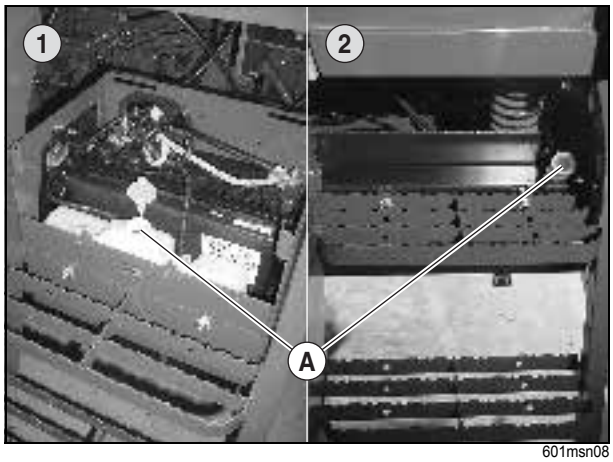
WINDSCREEN WASHER FLUID LEVEL : CHECK

The windscreen washer reservoir behind the right side ladder of the cab.

1 - Windscreen washer reservoir range ARES 500.

2 - Windscreen washer reservoir range ARES 600.

Fill the windscreen washer container (A).



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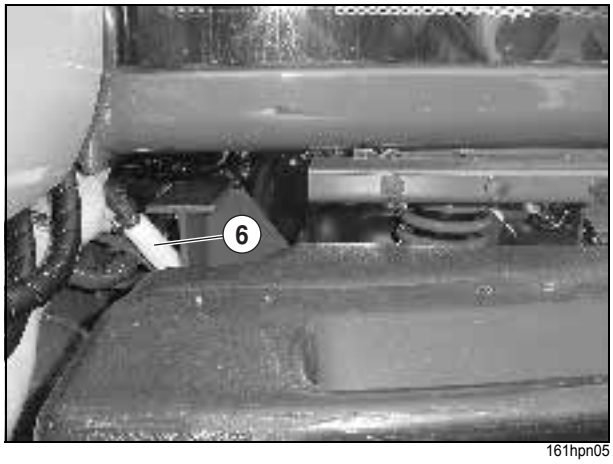
Operation n° 3

DIESEL FUEL FILTER: CLEANING

Important: The original strainer (6) cannot be dismantled. It must be replaced at the first mandatory service after the first 100 hours by a strainer that can be cleaned (C).

- Clean around the strainer located between the cab and the main tank.
- Loosen the clamps that hold the strainer to the fuel lines.
- Collect any diesel still in the feed line.
- Open the strainer by unscrewing parts (B) and (C).
- Clean the 2 parts of the strainer.
- Reassemble.
- Bleed the fuel line (see chapter "D").

Important: take care not to introduce any impurities into the diesel fuel system during this operation.



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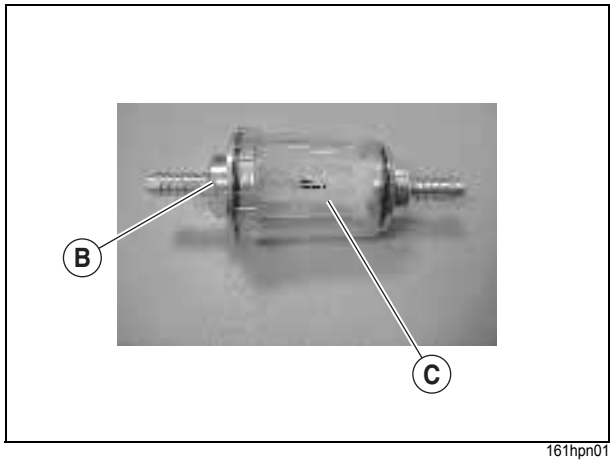

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Operation n° 4

ENGINE AIR FILTER: CLEANING

This maintenance operation has to be carried out with the greatest care, away from any dust. The long life of the engine depends on this.

- Place the tractor in a dust-free place before starting work.
- Raise the bonnet nose.
- Pull bolt (D) and turn lid (E) anti-clockwise, to remove it.
- When the main filter (F) needs to be cleaned, tapping it with the palm of the hand removes some of the dirt.

Important: Never use a compressed air blower.

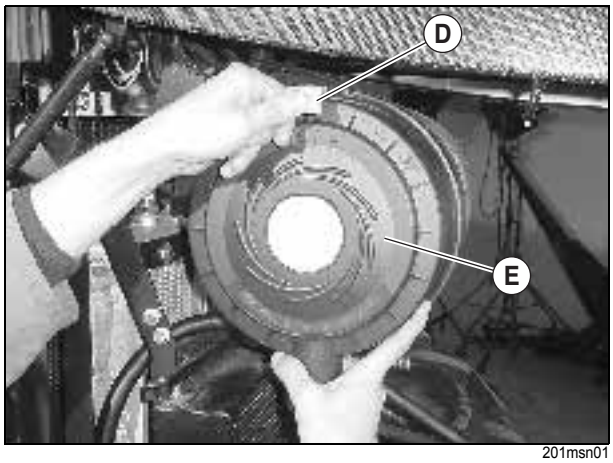
Check carefully that cover (E) is correctly fitted on the body of the filter, then push back bolt (D).

Check that the ventilation tubing is in good condition and that the clips are tightly secured.

Important: Generally speaking the main filter (F) must not be damaged or distorted during the cleaning operation. Replace it if necessary. During fitting, make sure that the arrows are pointing upwards.

ELIMINATION OF DUSTS (RANGE 500 ONLY)

Compress the valve (H).



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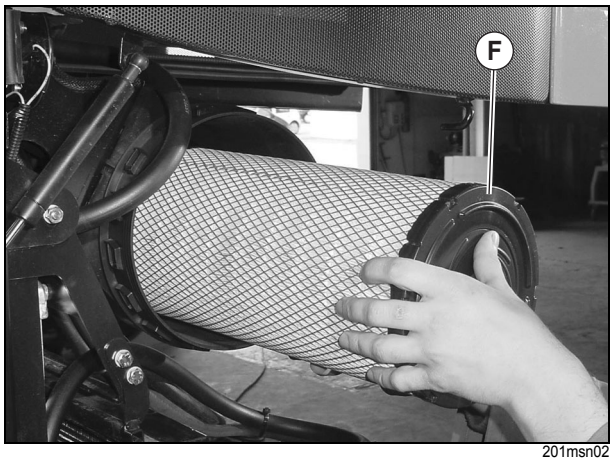

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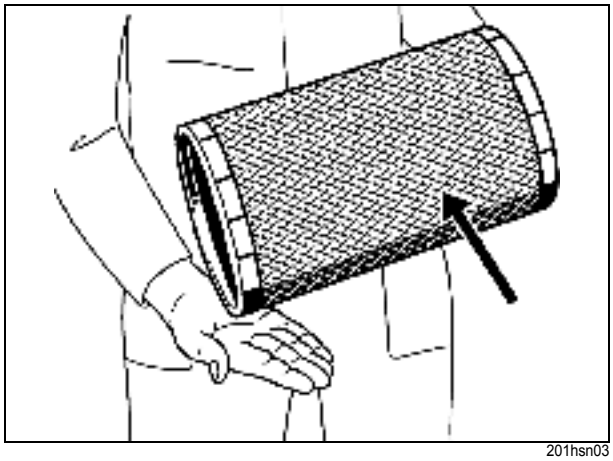
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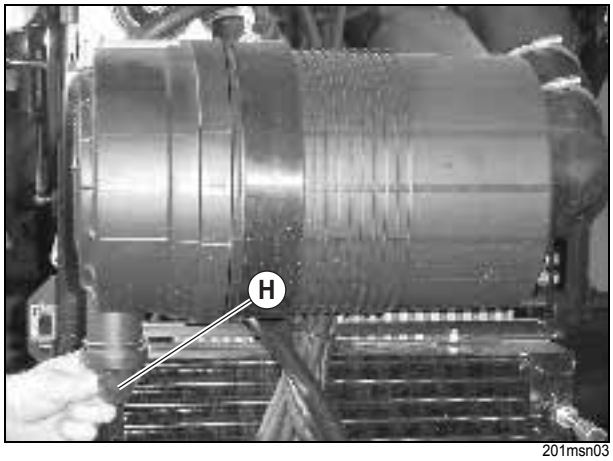

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Operation n° 5

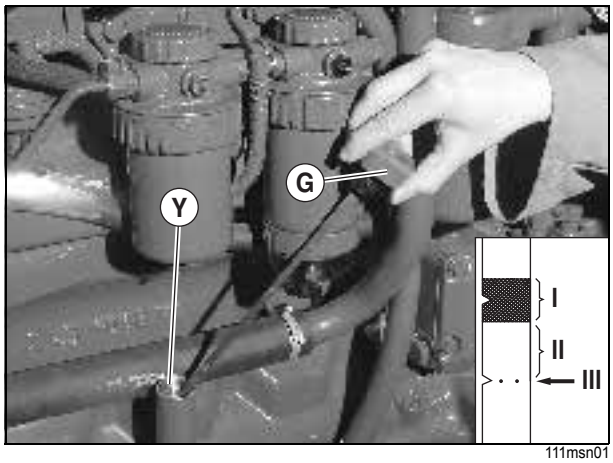
ENGINE OIL LEVEL: CHECK

Note: The engine has to be OFF for a minimum of 5 minutes before the oil level can be measured.

- Position the tractor on a flat horizontal surface.
- Unscrew cap (G) to clean the dipstick with a clean cloth.
- Screw the cap fully down.
- Remove the dipstick again and check the level:
  - I: Normal level.
  - II: Top up as soon as possible.
  - III: Top up before restarting the engine.

If the oil level drops unexpectedly or repeatedly, consult your approved CLAAS agent.

Important: Respect the specifications concerning oil quality and only top up when the level reaches the marker II.



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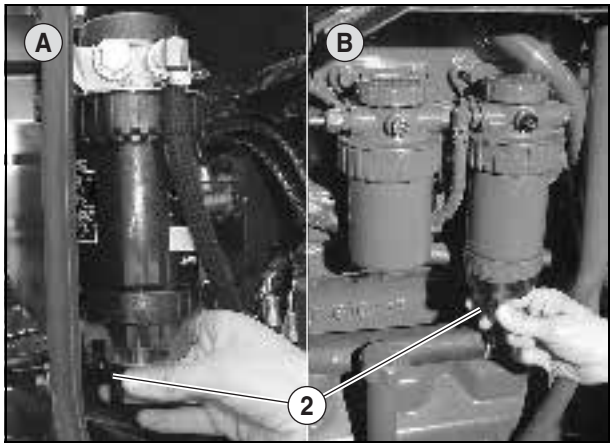
Operation n° 6

ELIMINATION OF WATER IN THE FUEL: CLEANING

A - Diesel filter range ARES 500.

B - Diesel filter range ARES 600.

Loosen the lower screw (2) of the diesel filter until all the water is eliminated.



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Operation n° 7

COOLANT LEVEL: CHECK

A - Coolant tank range ARES 500.

B - Coolant tank range ARES 600.

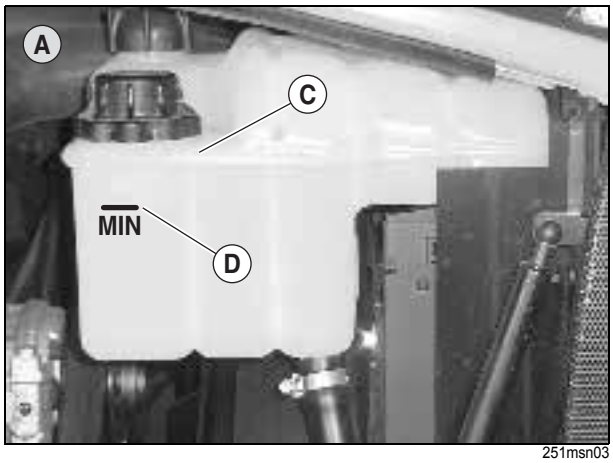
The coolant level must be betwen the markers (C) and (D) of the expansion tank:

- Mark (C): Maximum level.
- Mark (D): Minimum level.

Never run the engine if the level is not between (C) and (D). If a top-up is needed, fill to the maximum marker with approved coolant.

When filling, do not exceed the level inside the expansion tank (3) (range ARES 600 only).

Do not open the cap of the expansion tank before the temperature of the coolant has gone down. Do not work on the cooling system when the engine is hot. Danger of burns !



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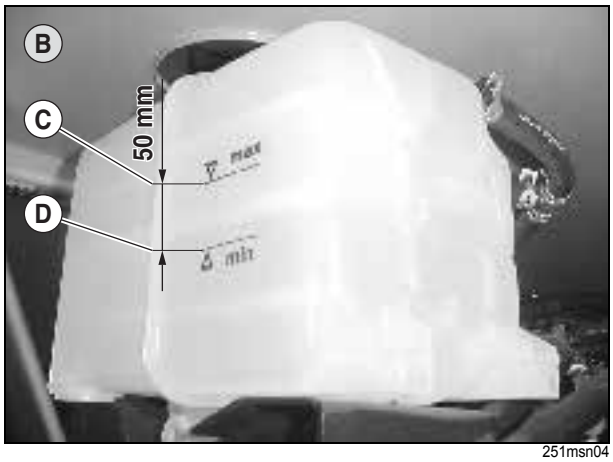

251msn04

Operation n° 8

SERVICE BRAKE FLUID LEVEL: CHECK

- Check that the level of tank (I) is at maximum.
- Top up if necessary with the recommended brake fluid.

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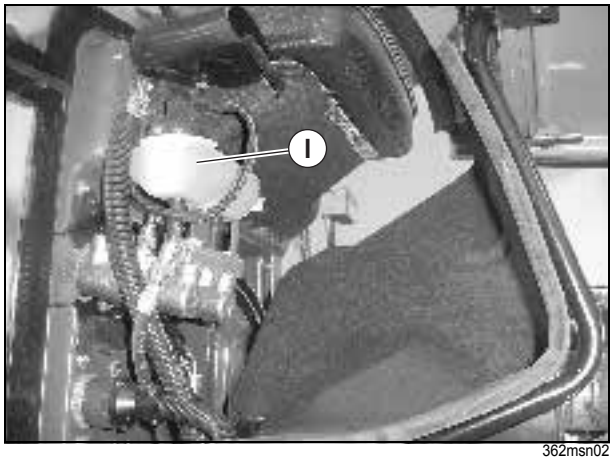


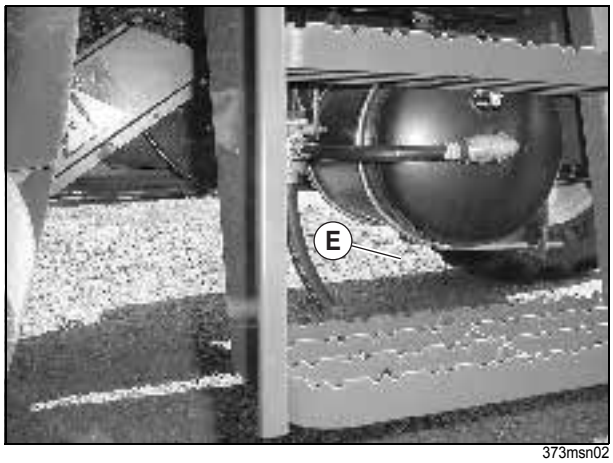
362msn02

Operation n° 9

BLEED AIR FROM THE PNEUMATIC BRAKING: CHECK

The aim of this operation is to eliminate water from the pneumatic circuit. It must be carried out just after the engine stops, when the circuit is still under pressure.

Press the drain valve (E) until all the air is eliminated.

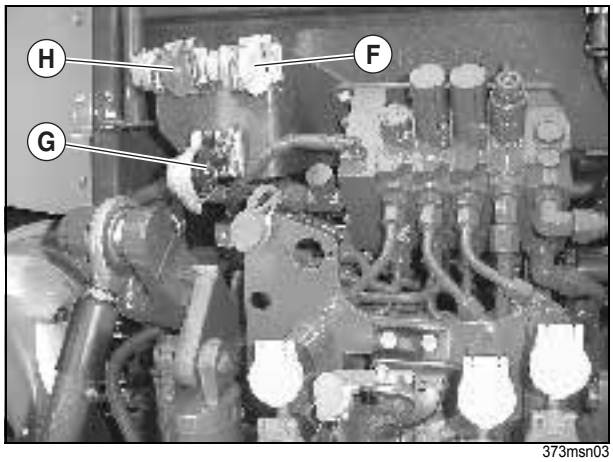


373msn02

Operation n° 10

PNEUMATIC BRAKING CONNECTORS: CHECK - GREASING

- Check the condition of connectors (F), (G) et (H), then have them replaced by your approved CLAAS agent if necessary.
- Grease the connectors regularly to prolong the life of the seals.



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Operation n° 11

HYDRAULIC FLUID LEVEL: CHECK

Note: Before checking the fluid level, the engine must have been stopped for a minimum of 5 minutes and the linkage arms must be in the low position.

- Position the tractor on a flat horizontal surface.
- Check the fluid level with dipstick (J).

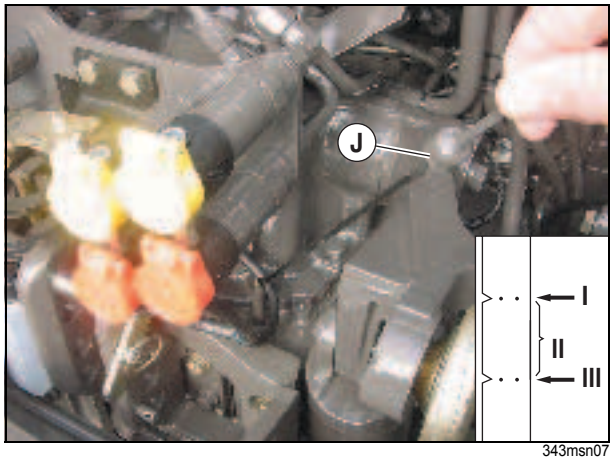
I - Normal level.

II - Top up as soon as possible.

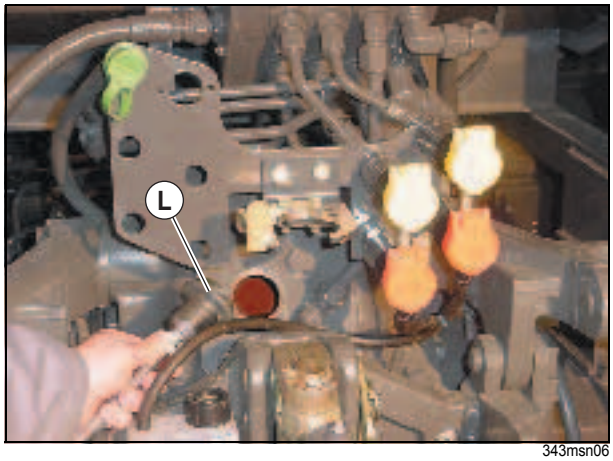
III - Top up before restarting the engine.

Important:
- The oil level must never fall below the lower mark (III).
- If using hydraulic implements that require a large quantity of fluid in their power supply system (hydraulic motors, large capacity cylinders), top the fluid up to the top marker (I). The quantity of oil necessary between mark (III) and mark (I) is about 8 l.
- Failure to carry out these instructions can in some circumstances cause considerable damage to the power transmission.

The oil is topped up via cap (L).



343msn07



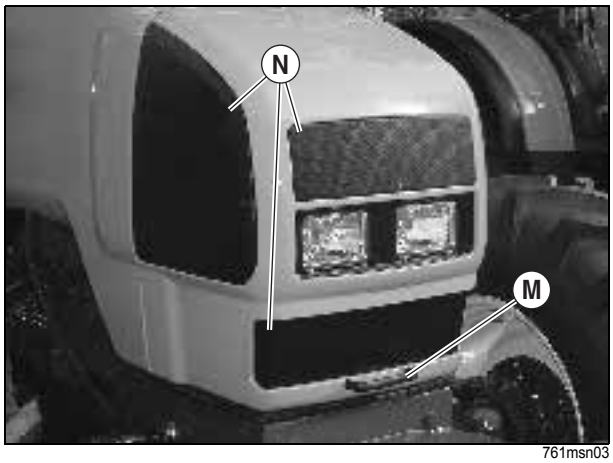
343msn06

Operation n° 12

RADIATOR GRILLS: CLEANING

- Raise the cover using handle (M).
- Clean the radiator grilles (N) with compressed air.

Important: Use of a high pressure washer is not recommended.



761msn03

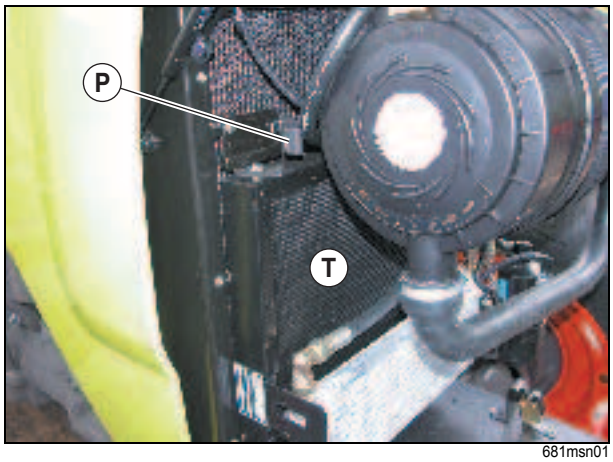
Operation n° 13

COOLERS: CLEANING

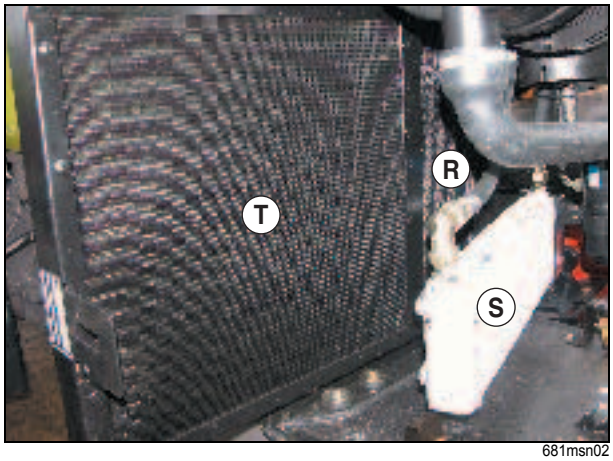
Important: Take all necessary precautions not to damage the coolers. Cleaning with a high pressure washer is forbidden. A damaged radiator or radiator core must be changed without delay.

600 RANGE

- Unlock catch (P), then pull cooling condenser (T) sideways*.
- Pivot the hydraulic oil cooler (S) forwards.
- Clean the cooler cells with compressed air,(maximum 5 bar) from the inside towards the outside. Respect the following order:
  - Engine cooling (R).
  - Cooling condenser (T)*.
  - Hydraulic oil cooling (S).
  - Replace the coolers in the reverse order of dismantling.



681msn01

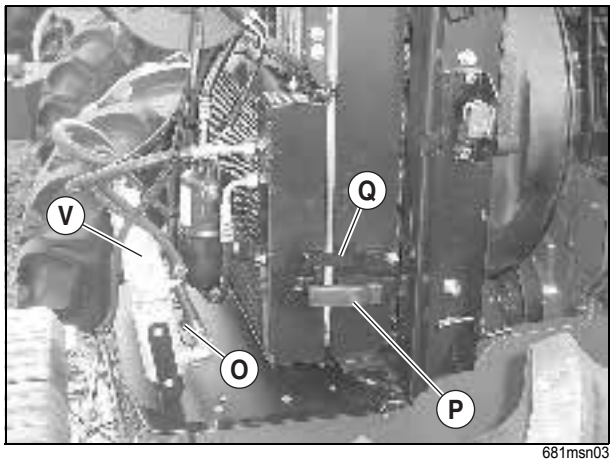


681msn02

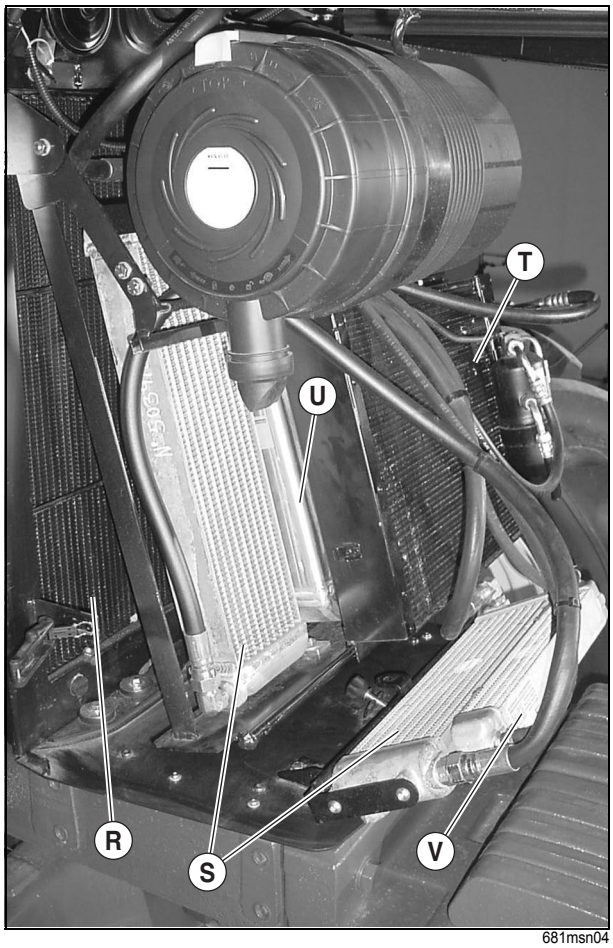
** Except for tractors with no air conditioning.*

500 RANGE

- Undo screw (O) of the diesel cooler.
- Switch the diesel cooler (V)*** forwards.
- Unlock catch (P), then pull coolers (S), (U)** and (T) forwards*.
- Position stand (Q), then pull condenser (T) sideways*.
- Clean the cooler cells with compressed air,(maximum 5 bar) from the inside towards the outside. Respect the following order:
  - Engine cooling (R).
  - Intercooler (U)**.
  - Hydraulic oil cooling (S).
  - Cooling condenser (T)*.
  - Diesel coolers (V)*** and second hydraulic oil cooler (S).
- Replace the coolers in the reverse order of dismantling.



681msn03



681msn04

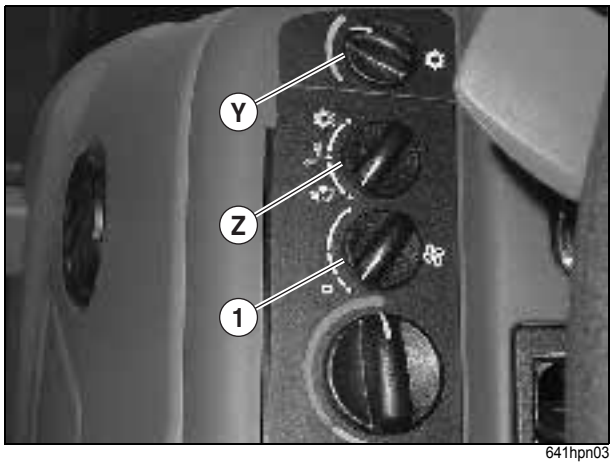
** Except for tractors with no air conditioning.*
*** Except for the ARES 546.*
**** Only ARES 566.*

Operation n° 14

AIR CONDITIONING COMPRESSOR

LUBRICATING THE COMPRESSOR

- Start up the compressor to ensure the internal seal is lubricated.
- In cold weather: Warm up the engine before turning on the compressor.
- Turn knobs (Y) and (Z) as far as possible to the right and select a fan speed with knob (1).



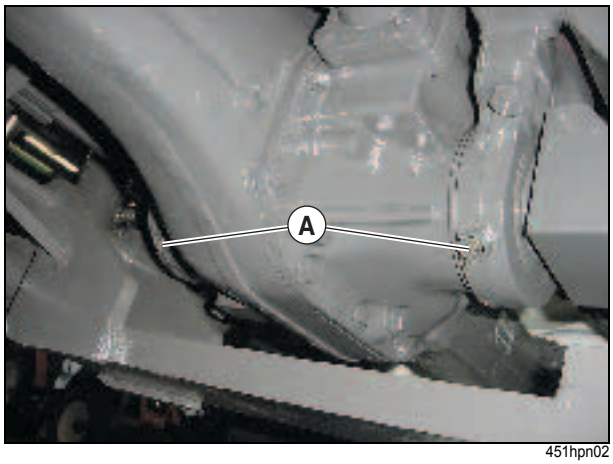
641hpn03

Operation n° 15

FRONT AXLE SWING BEARINGS : GREASE

Clean the grease nipples and apply grease as follows.

- Rigid Front Axle (A).
- PROACTIV Front Axle (B).



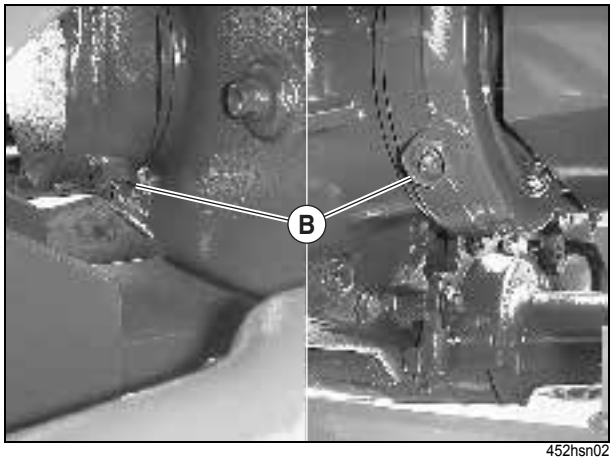
451hpn02

Operation n° 16

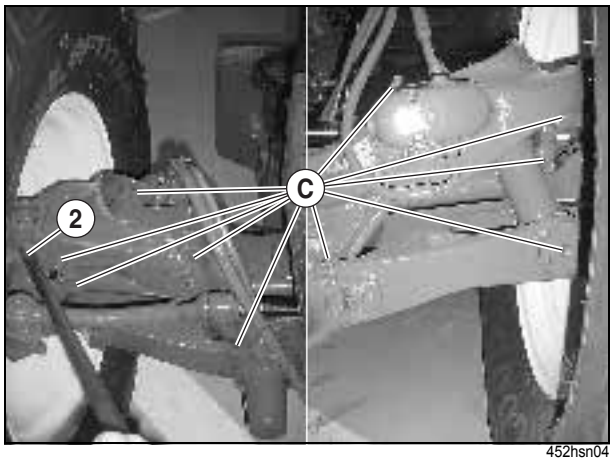
PROACTIV FRONT AXLE: GREASE - CHECK

Clean the grease nipples (C) on each side of the front axle and carry out the greasing.

Lever the lower and upper ball joints (2), if the axial backlash exceeds 1 mm, consult your CLAAS approved agent.



452hsn02



452hsn04

Operation n° 17

REAR LINKAGE: GREASE

Clean the grease nipples and apply grease as follows:

1 - 3rd point link (2 nipples) (D).

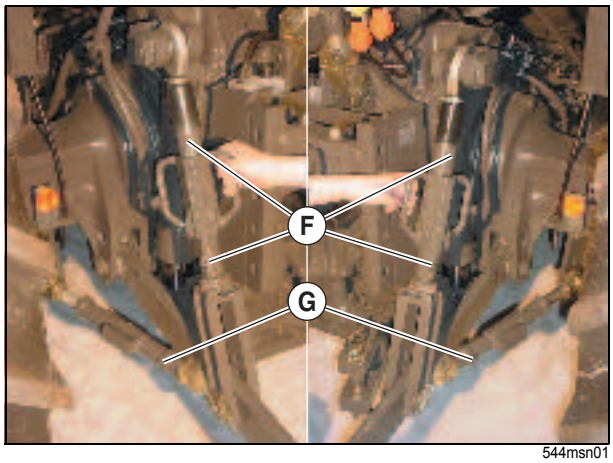
2 - Linkage rods (2 grease nipples/rod) (F).

3 - Stabilisers (1 nipple/stabiliser) (G).

Oil the ball joints.

PICKER HOOK (OPTION)

Clean the grease nipples (E) and grease.



544msn01

Operation n° 18

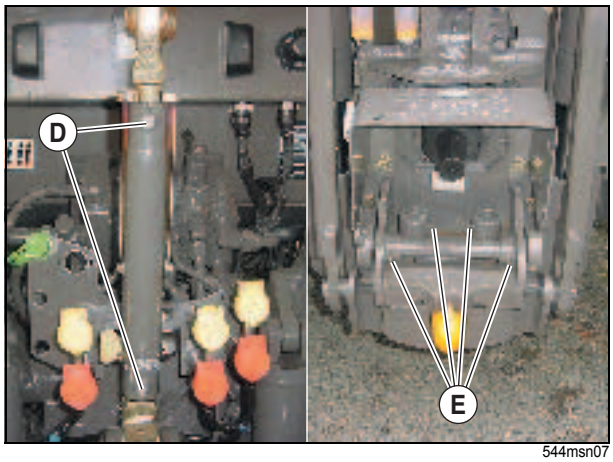
FRONT LINKAGE: GREASE

Clean the grease nipples and apply grease as follows:

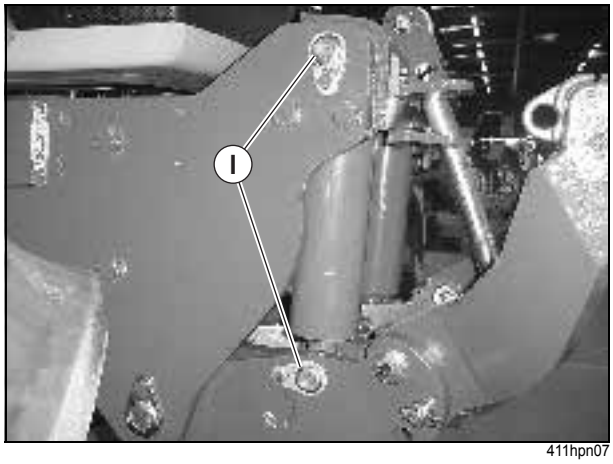
1 - Jack pins: 2 grease nipples (I).

2 - Linkage arm pins: 2 grease nipples (J).

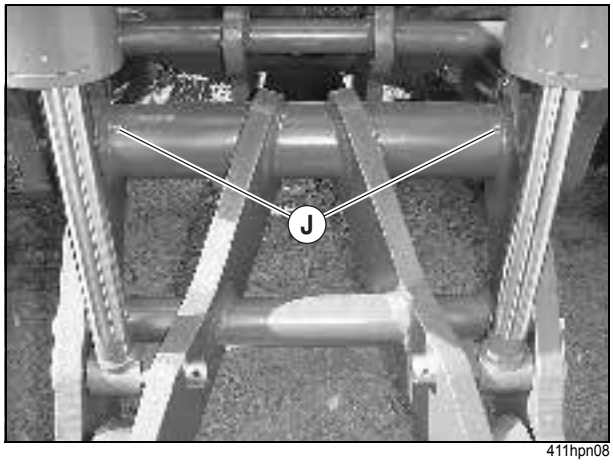
Oil the ball joints.



544msn07



411hpn07



411hpn08

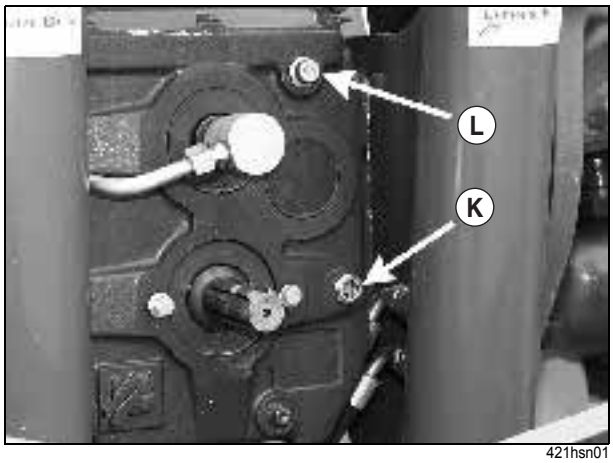
Operation n° 19

FRONT POWER TAKE-OFF BOX OIL LEVEL: CHECK

The oil level must be visible from the side (K).

Adjust the oil level through aperture (L) if necessary.

Important: The oil level must not be higher than the spyhole: Risk of heating, premature wear of the different mechanical parts.

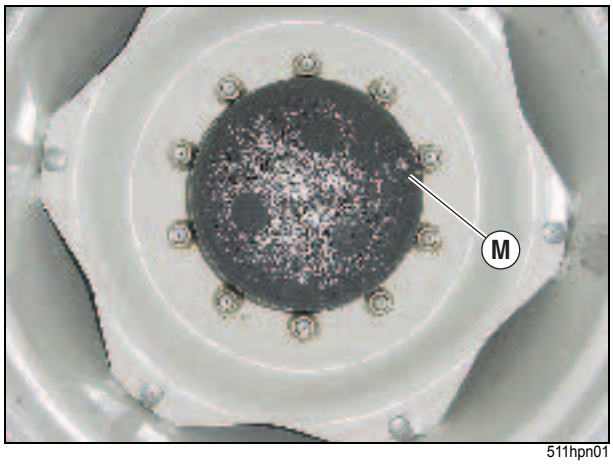


421hsn01

Operation n° 20

FRONT AXLE FINAL DRIVE OIL LEVEL: CHECK

- Position the tractor on a flat horizontal surface.
- Position the inscription "OIL LEVEL" horizontally.
- Unscrew the plug (M).
- The oil level should be just at the bottom of the aperture; Top up if required.
- Tighten the drain plug (M): Torque setting 7 daN.m.



511hpn01

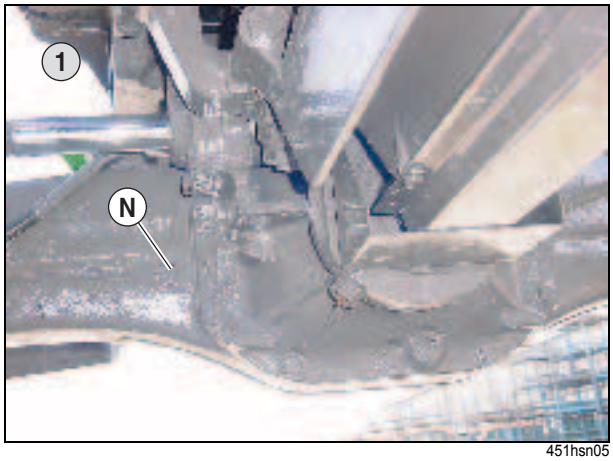
Operation n° 21

FRONT AXLE DIFFERENTIAL UNIT OIL LEVEL: CHECK

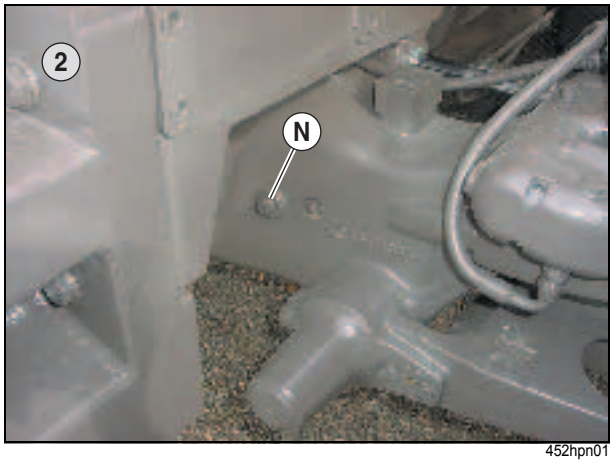
- Position the tractor on a flat horizontal surface.
- Unscrew the plug (N). The oil level should be just at the bottom of the aperture; Top up if required.
- Tighten the drain plug (N): Torque setting 7 daN.m.

1 - Rigid Front Axle.

2 - PROACTIV Front Axle.



451hsn05

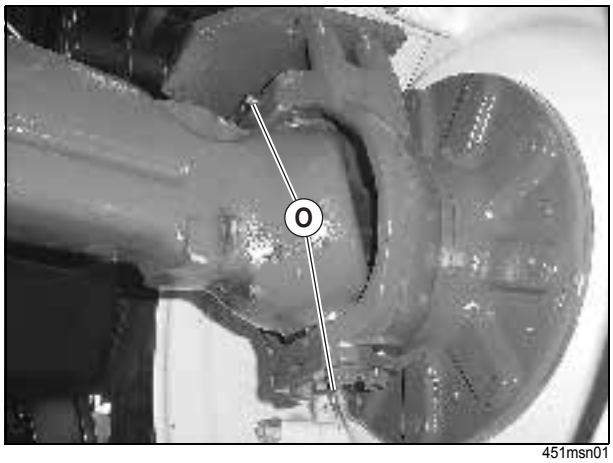


452hpn01

Operation n° 22

RIGID FRONT AXLE WHEEL PINS: GREASE

Clean the grease nipples (O) and grease: 2 grease nipples for each kingpin.

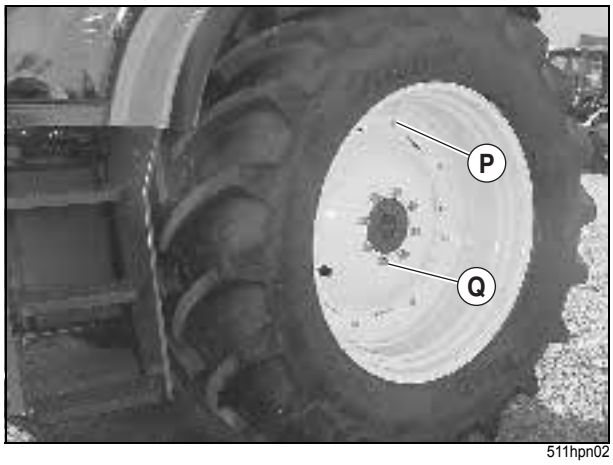


451msn01

Operation n° 23

WHEEL DISC AND RIM NUTS: CHECK

- Check the tightness of the nuts (Q) attaching the wheel disk to the hub for each of the front and rear wheels (45 daN.m).
- Check the tightness of the rim nuts (P) for each of the wheels:
  - Rims with spacers: 25 daN.m.
  - Rims with welded circles: 30 daN.m.



511hpn02

Operation n° 24

TYRE INFLATION PRESSURE: CHECK

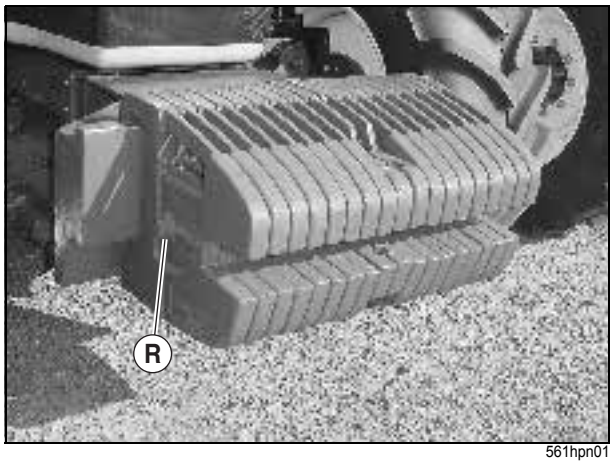
See chapter "J".


511hpn03

Operation n° 25

FRONT WEIGHT ATTACHMENT BOLTS: CHECK

Check the tightness of bolt (R): Front weight attachments.



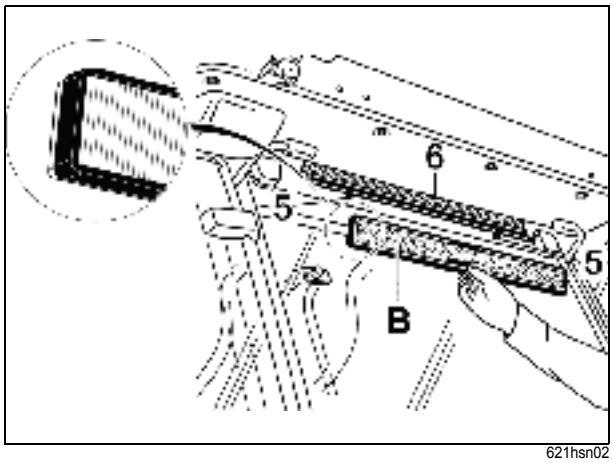
561hpn01

Operation n° 26

CAB "RECYCLED" AIR FILTER: CHECK - REPLACE

- Give a quarter turn to the butterfly screws (5).
- Lower the grille (6).
- Remove and replace the element (B).

Note: Filter (B) is correctly assembled when its foam seal is turned towards the rear of the tractor.



621hsn02

Operation n° 27

FRONT POWER TAKE-OFF BOX OIL: REPLACE

- Position the tractor on a flat horizontal surface.
- Place a suitable recipient under cap (S).
- Unscrew the plug (S).
- Once all the oil has poured out, replace the cap.
- Fill as indicated in operation n° 19.

421hsn02

Operation n° 28

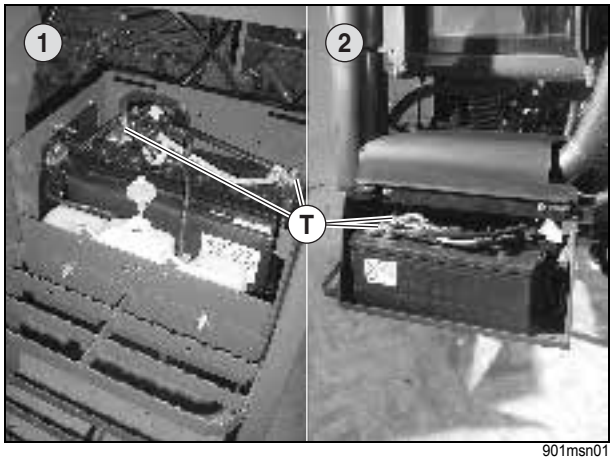
BATTERY TERMINALS: CLEANING - GREASE

1 - Battery housing range ARES 500.

2 - Battery housing range ARES 600.

Clean and grease battery terminals (T).

Handle the battery with great care because it contains sulphuric acid that must not come into contact with the eyes or skin. If there is any such contact, rinse with copious amounts of water. Keep sparks, incandescence and flames well away from the battery elements: Risk of explosion.



901msn01

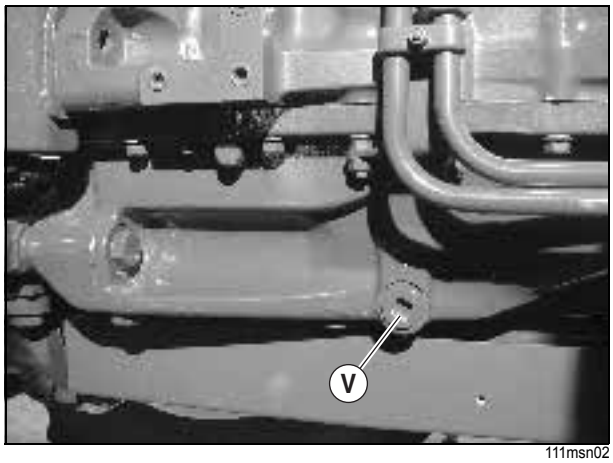
Operation n° 29

ENGINE OIL: REPLACE

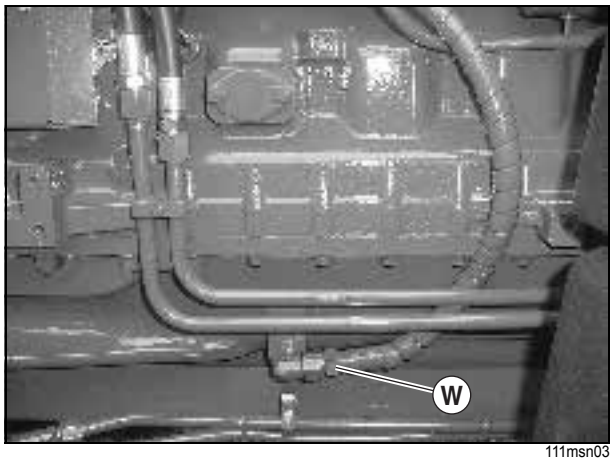
- Run the engine at a speed of 1200 rpm until it reaches its normal operating temperature.
- Stop the engine.
- Place a suitable recipient under cap (V) ; Connection (W) for tractors equipped with pneumatic braking.
- Unscrew drain plug or connection (W).

The oil is hot! Avoid getting burned!.

- While the oil is draining out, change the filter cartridges (see following operation).
- Once the oil has poured out, replace plug (V) or connection (W).



111msn02



111msn03

Operation n° 30

DIESEL FUEL FILTER CARTRIDGES: REPLACE

1 - Filter position range ARES 500.

2 - Filter position range ARES 600.

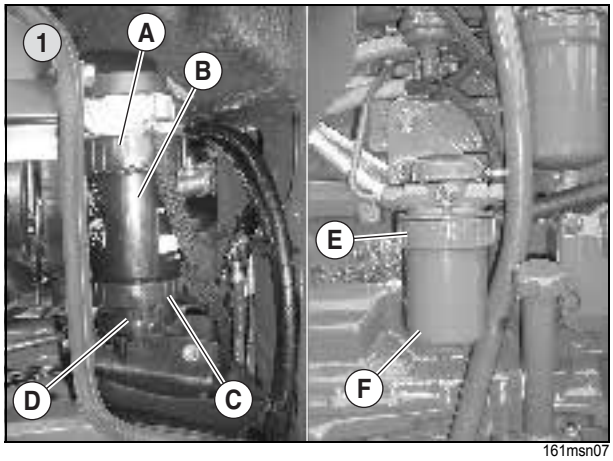
PRE-FILTER

- Loosen the holding ring (A).
- Remove the pre-filter (B).
- Take the holding ring (C) and the decantation bowl (D) and place them on the new filter.
- Replace the old filter with a new one.
- Tighten the holding ring (A) until it is locked.

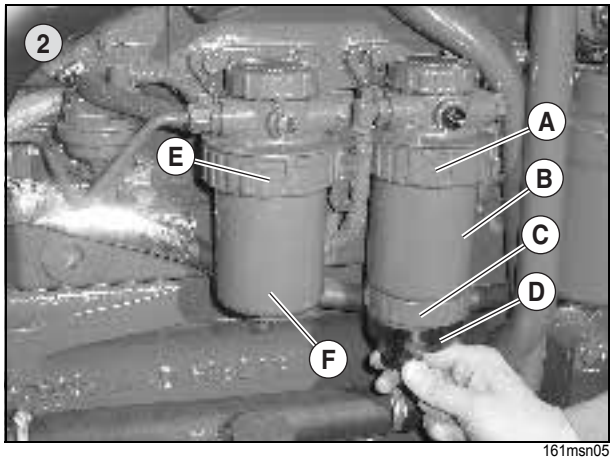
FILTER

- Loosen holding ring (E) and remove filter (F).
- Replace the old filter with a new one.
- Tighten the holding ring (E) until it is locked.
- Drain (see chapter "D").

Note: The holding ring is in the correct position when no further resistance is felt during tightening.



161msn07



161msn05

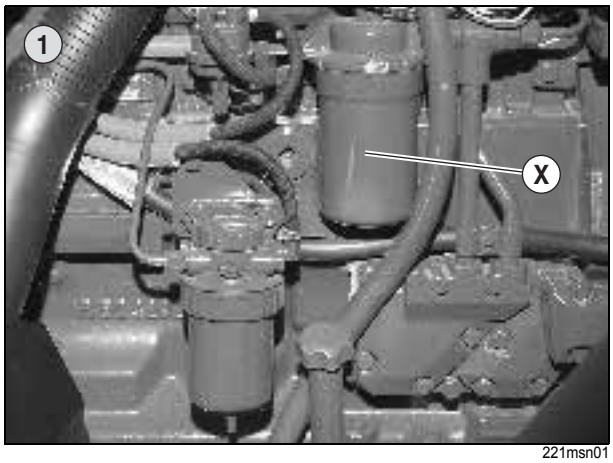
Operation n° 31

ENGINE OIL FILTER CARTRIDGE: REPLACE

- Remove the right cover.
  1 - Filter position range ARES 500.
  2 - Filter position range ARES 600.
- Unscrew the filter cartridge (X) using a filter wrench.

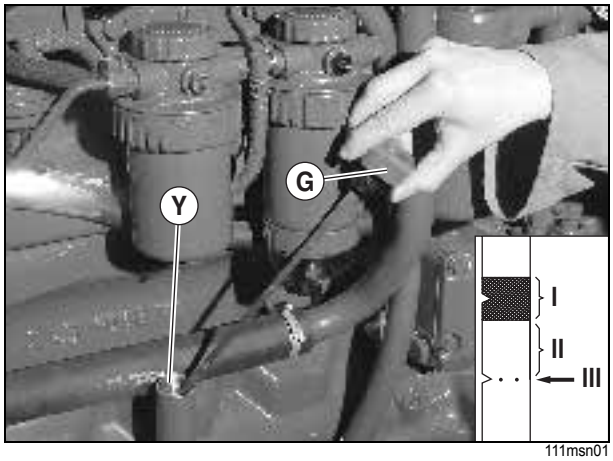
The oil is hot! Avoid getting burned!.

- Lightly oil the rubber seal of the new filter.
- Replace the old filter with the new one and screw down until the seal is in contact with the filter base. Then tighten it another half turn.
- Fill the oil sump through aperture (Y), up to the normal level of use (see operation n° 5).



221msn01

221msn02



111msn01

Operation n° 32

BELTS: CHECK - CHANGE

CHECK

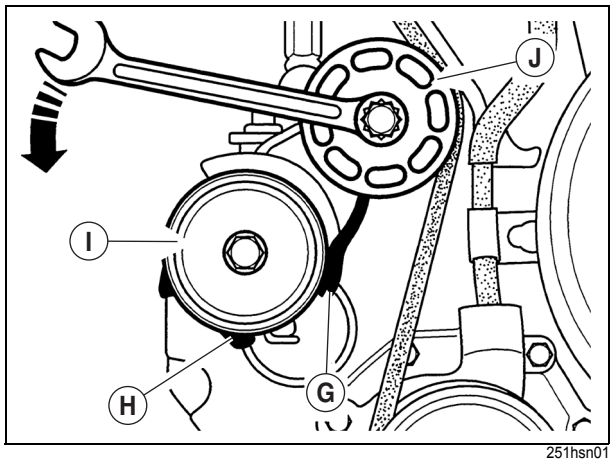
- Inspect the moulded end pieces (G) and (H) on the belt tensioner (I).
- If end stop (G) of the pivoting tensioner arm hits the fixed end stop (H), check the state of the different belt pulleys. If the pulleys seem normal, replace the belt.

REPLACEMENT

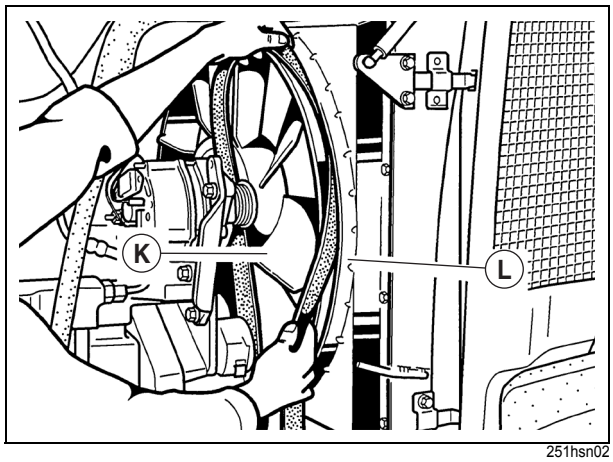
- Release the belt tension using a wrench on pulley (J).
- Remove the old belt from the pulleys.
- Slip the new belt between fan (K) and the cooling nozzle (L).
- Assemble the new belt taking care to follow the correct path over the different pulleys (see "Positioning the belt").
- Tighten the belt with the tensioner (J). Remove the wrench.

POSITION OF BELT

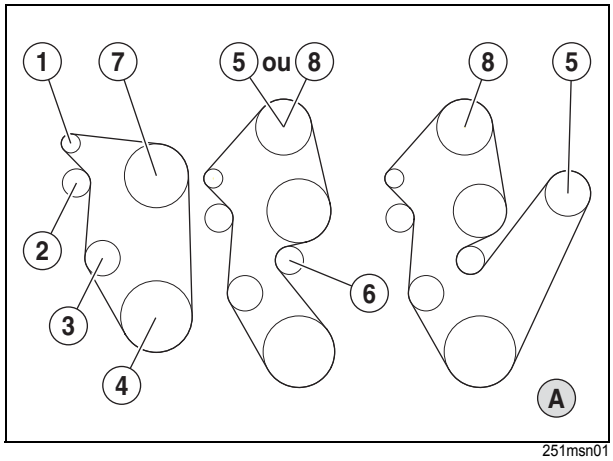
1 - Alternator.
2 - Tensioner roller.
3 - Water pump.
4 - Crankshaft.
5 - Cooling compressor.
6 - Return roller.
7 - Fan pulley.
8 - Pneumatic braking compressor:
A - ARES 500 Range.
B - ARES 600 Range.



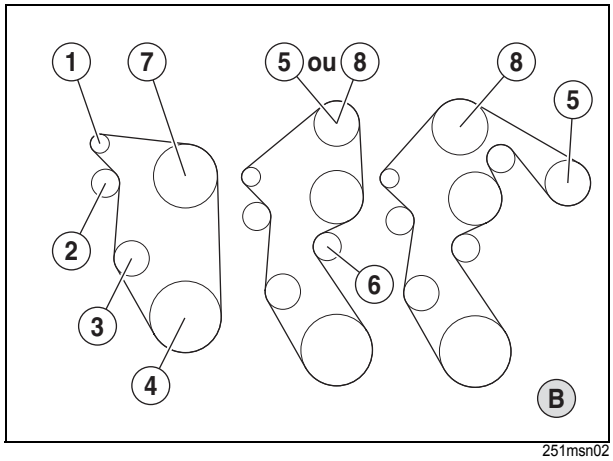
251hsn01



251hsn02



251msn01

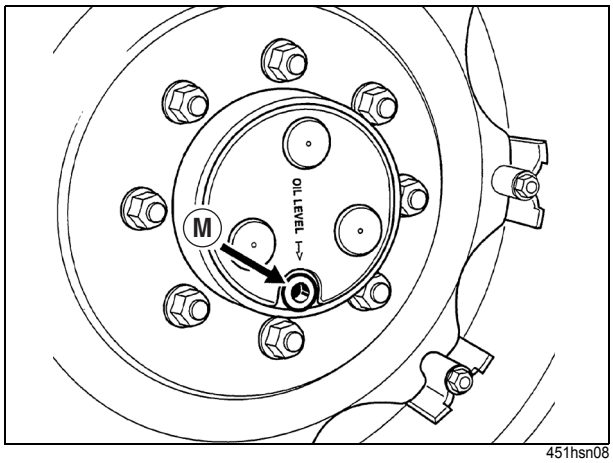


251msn02

Operation n° 33

FRONT AXLE FINAL DRIVE OIL: REPLACE

- Position the tractor on a flat horizontal surface.
- Position the wheel so as to place cap (M) downwards.
- Place a suitable recipient under cap (M).
- Unscrew the drain plug and collect the used oil.
- When all the oil has drained out, refill the casing to the correct level (see operation n° 20).
- Tighten the drain plug (M): Torque setting 7 daN.m.



451hsn08

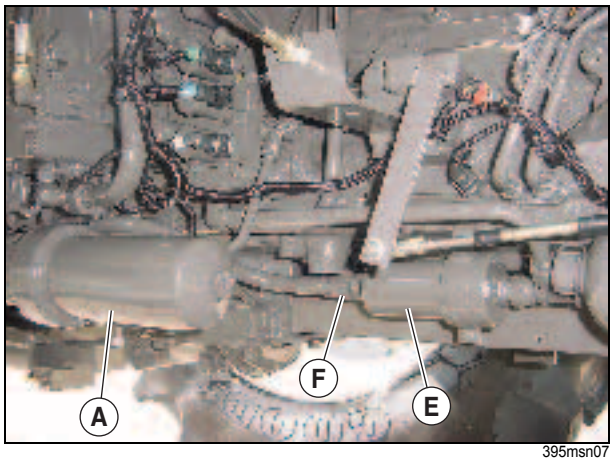
Operation n° 34

HYDRAULIC/TRANSMISSION SYSTEM FILTER CARTRIDGES: REPLACE

HYDRAULIC SYSTEM LS 110 L/MIN

The high pressure (A) and low pressure (E) hydraulic filters are located on the right side of the transmission.

Before sliding under the tractor to carry out this operation, stop the engine, apply the hand brake and remove the ignition key.



395msn07

High pressure hydraulic filter

1 - Unscrew bowl (A) and remove the filter element (B).

2 - Slide the new filter element (B) in the filter head (C).

3 - Assemble seal (D) on the threaded part of the bowl (A) after smearing it with the new oil.

4 - Tighten bowl (A) by manually screwing it until blocked.

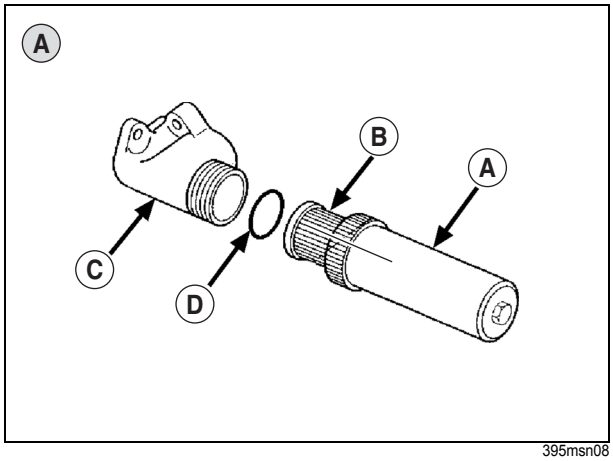
5 - Check sealing with engine running.

Low pressure hydraulic filter

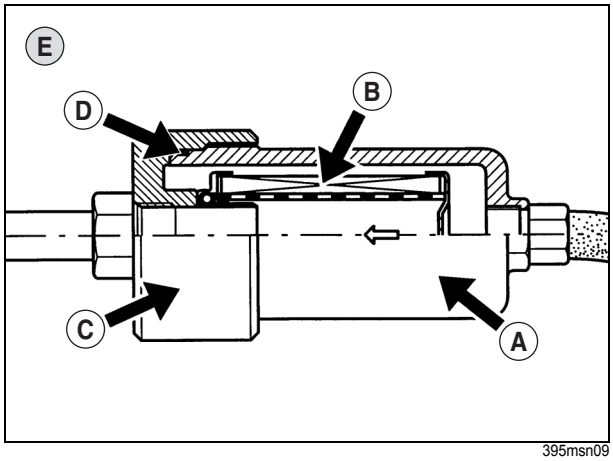
1 - Unscrew the tubing (F) from filter (E).

2 - Then proceed in the same way as for the high pressure filter.

3 - Screw back tubing (F).



395msn08



395msn09

HYDRAULIC SYSTEM LS 100 L/MIN

The high pressure (A) and low pressure (E) hydraulic filters are located on the right side of the transmission.

The high pressure hydraulic filter (I) is located on the left side of the transmission.

Before sliding under the tractor to carry out this operation, stop the engine, apply the hand brake and remove the ignition key.

High pressure hydraulic filter

1 - Unscrew bowls (A) and (I) then remove the filter element.

2 - Slip the new filter element into filter heads (G) and (H).

3 - Assemble the new seals after smearing them with new oil.

4 - Screw back bowls (A) and (I) by hand until they lock in position.

5 - Check sealing with engine running.

Low pressure hydraulic filter

Proceed in the same way as for the hydraulic circuit LS 110 l/min.

OPEN CENTRE HYDRAULIC CIRCUIT

The high pressure (A) and low pressure (E) hydraulic filters are located on the right side of the transmission.

High pressure hydraulic filter

1 - Unscrew bowls (A) and remove the filter element.

2 - Slide the new filter element into the filter heads (G).

3 - Assemble the new seals after smearing them with new oil.

4 - Screw back bowls (A) tightening them manually until they lock.

5 - Check sealing with engine running.

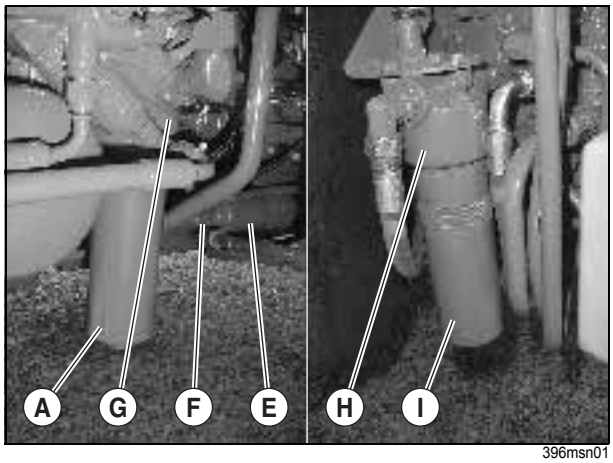
Low pressure hydraulic filter

Proceed in the same way as for the hydraulic circuit LS 110 l/min.

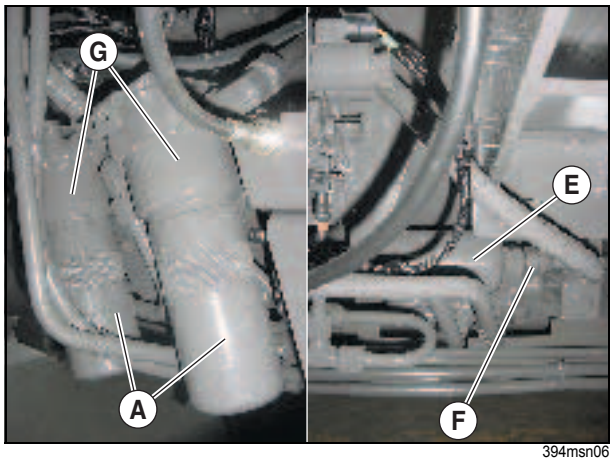
Operation n° 35

HAND BRAKE CLEARANCE: CHECK

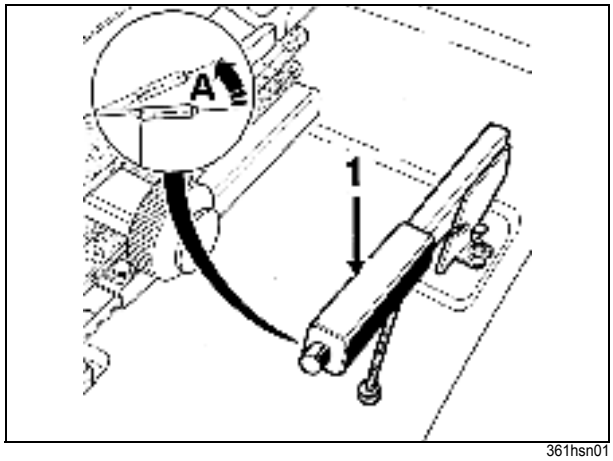
The travel (A) at the lever (1) must be between 110 and 140 mm (off load clearance). With disc wear, the clearance increases. If the travel (A) is greater than 140 mm, have the hand brake travel adjusted by an approved CLAAS agent.



396msn01



394msn06

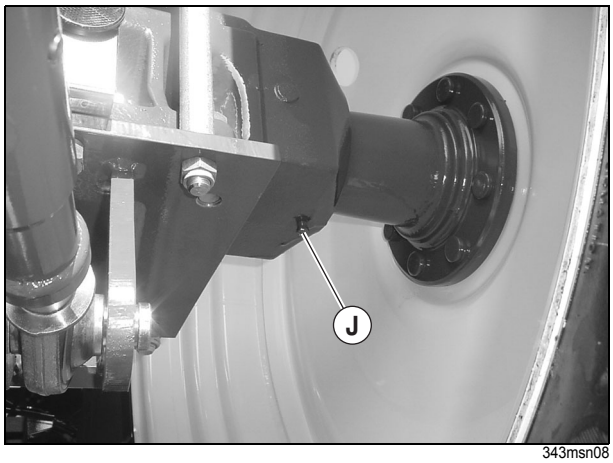


361hsn01

Operation n° 36

WHEEL HUBS: GREASE

Remove caps (J) and replace them with grease nipples. Apply an appropriate amount of grease and replace the caps.



343msn08

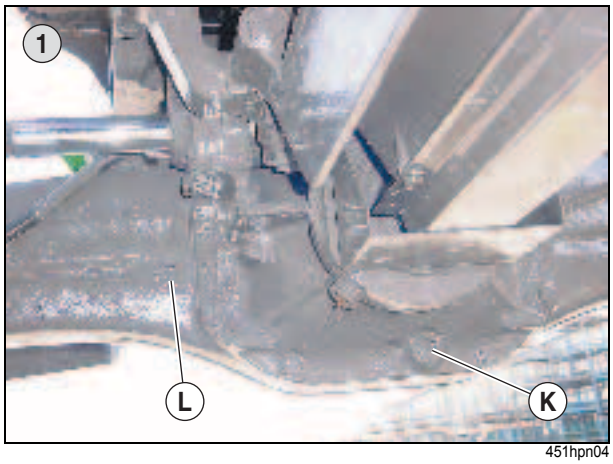
Operation n° 37

FRONT AXLE DIFFERENTIAL SUMP OIL: REPLACE

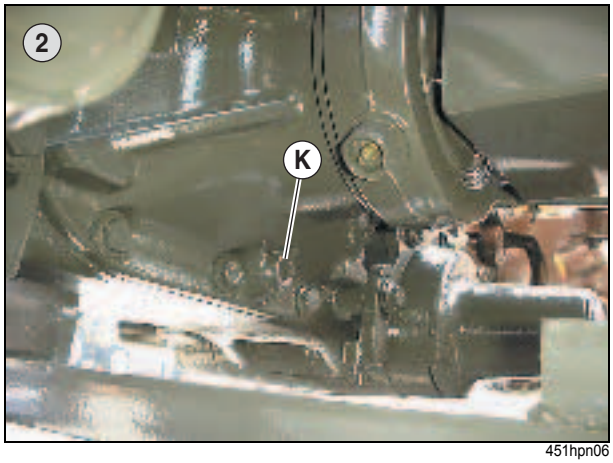
- Position the tractor on a flat horizontal surface.
- Place a suitable recipient under cap (K).
- Unscrew the drain cap (K) and the filling cap (L).
- When all the oil has drained out, screw back the drain cap (K): Torque setting 7 daN.m.
- Fill the differential casing through the filler plug aperture. There should be oil up to the lip of the orifice (L).
- Tighten the drain plug (L): Torque setting 7 daN.m.

1 - Rigid Front Axle.

2 - PROACTIV Front Axle.



451hpn04



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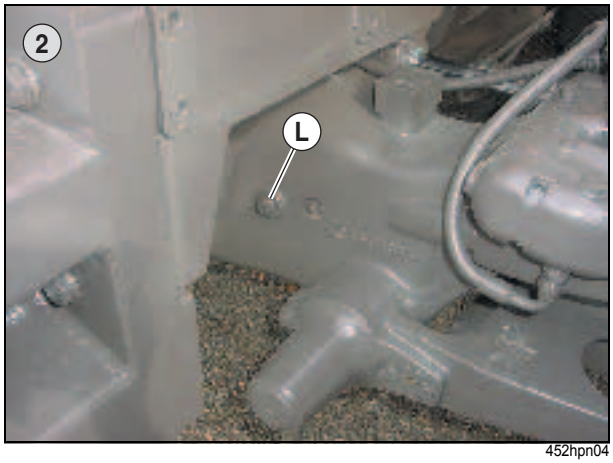
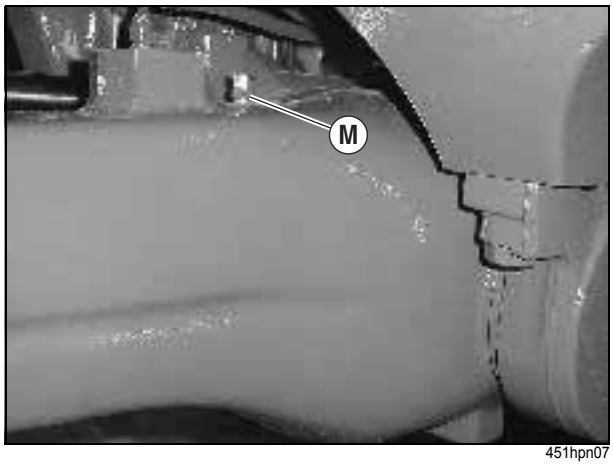


452hpn04

Operation n° 38

FRONT AXLE BREATHER: REPLACE

- Unscrew the vent (M) on the right side for the rigid axle.
- Unscrew vent (N) on the left side for the PROACTIV axle.
- Replace it with a new breather.



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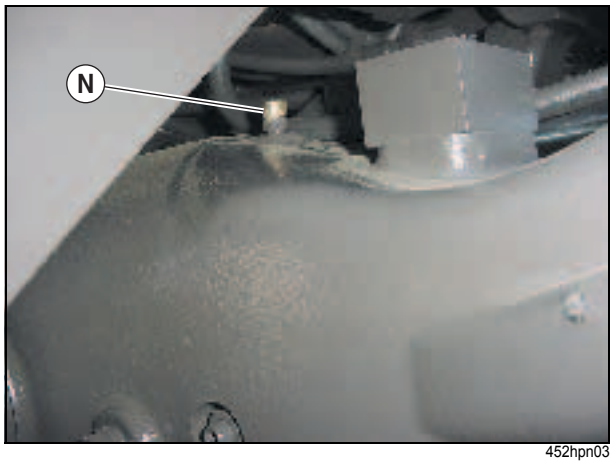
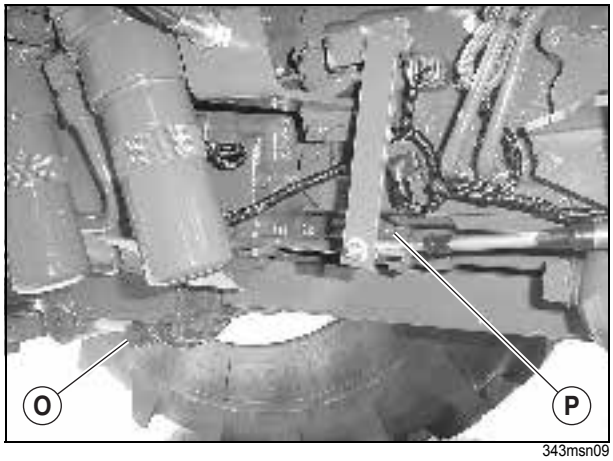


452hpn03

Operation n° 39

HYDRAULIC/TRANSMISSION OIL: REPLACE

- Position the tractor on a flat horizontal surface.
- Place the front linkage in the high position.
- Fully lower the rear linkage.
- Place a suitable recipient under the drain caps.
- Unscrew the caps of the rear axles and the gearbox (O), (P).
- When all the oil has drained out, screw back caps (O), (P): Torque setting 4 daN.m.
- Carry out operations n° 34 and n° 41 (changing filters and the strainer).
- Fill the transmission with oil through the filling aperture.
- Check the level as indicated in operation n° 11.

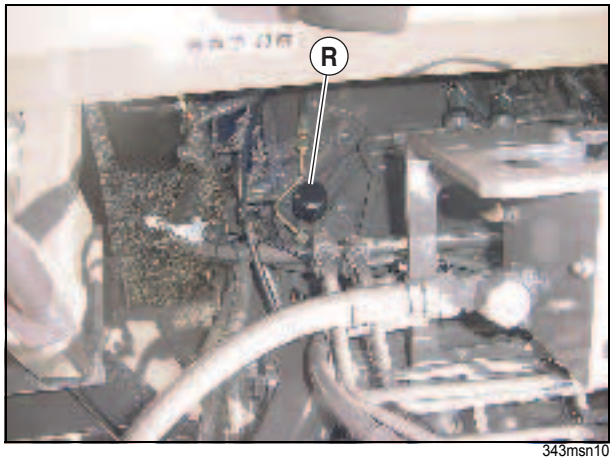


343msn09

Operation n° 40

REAR AXLE BREATHER: REPLACE

Unscrew the breather (R) and replace it.



343msn10

Operation n° 41

HYDRAULIC STRAINER: REPLACE

HYDRAULIC CIRCUIT LS 110 L/MIN

1 - Unscrew bowl (A) and remove the filter element (B).

2 - Slide the new filter element (B) in the filter head (C).

3 - On the threaded part of bowl (A), fit seal (D) after coating it with clean oil.

4 - Tighten bowl (A) by manually screwing it until blocked.

5 - Check sealing with engine running.

HYDRAULIC CIRCUIT LS 100 L/MIN

1 - Unscrew filter (F).

2 - Lightly oil the rubber seal of the new filter.

3 - Screw the filter by hand until it locks in position.

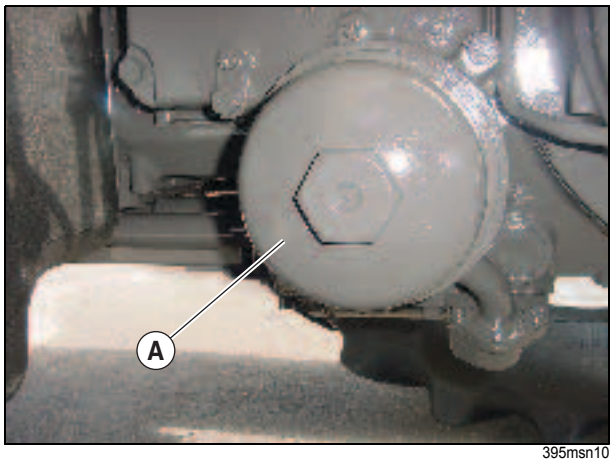
4 - Check sealing with engine running.

OPEN CENTRE HYDRAULIC CIRCUIT

Unscrew filter (G), then proceed in the same way as for the hydraulic circuit LS 100 l/min

GEARBOX - LOW PRESSURE

After draining the transmission. Remove plug (H) and replace the filter element. Replace plug (H) using new oiled seals.



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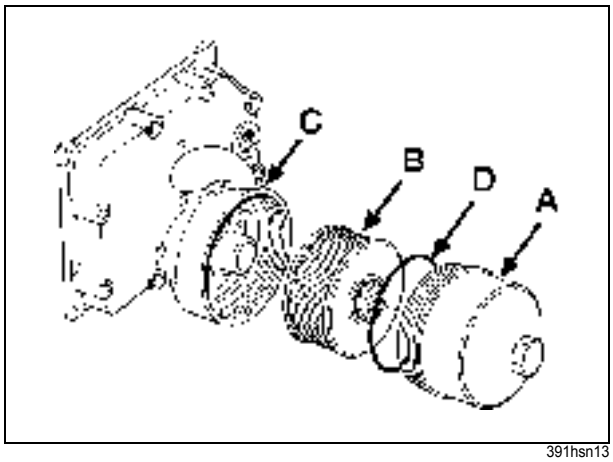
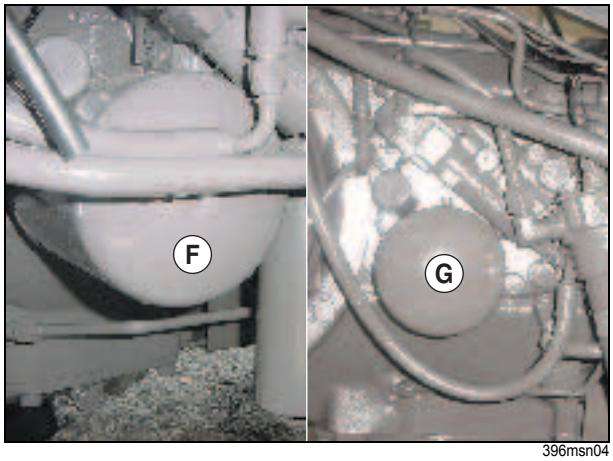
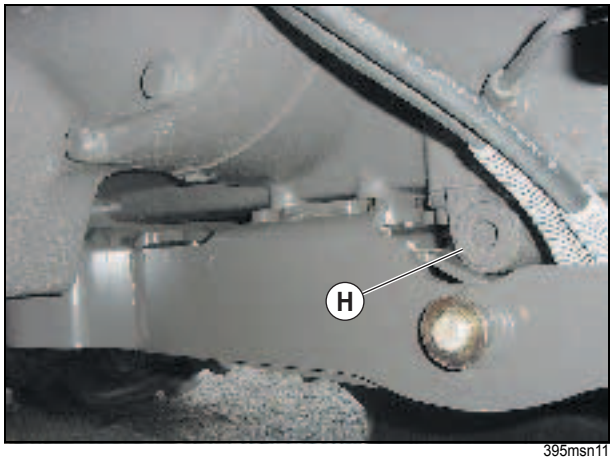


391hsn13



396msn04



395msn11

Operation n° 42

ENGINE AIR FILTERS: REPLACE

The air filter needs servicing as follows:

- If the warning light on the control panel comes on: Change the main filter.
- Every 2 years or every 1000 h: Change the main element and the safety element.

Important: This operation must be carried out with the greatest care and in a dust-free place, the long life of the engine depends on it.

- Raise the bonnet nose.
- Pull bolt (D) and turn lid (E) anti-clockwise, to remove it.
- Remove the main filter (F).
- Remove the safety filter (C).

Important: Never start the engine with the air filters removed.

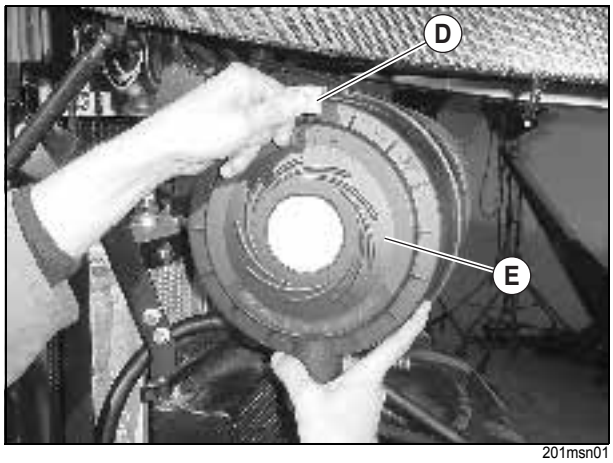
Remove the fine dust on the inside surface of the filter housing with a clean, dry cloth.

Important: Failure to respect these instructions invalidates the guarantee for the engine!

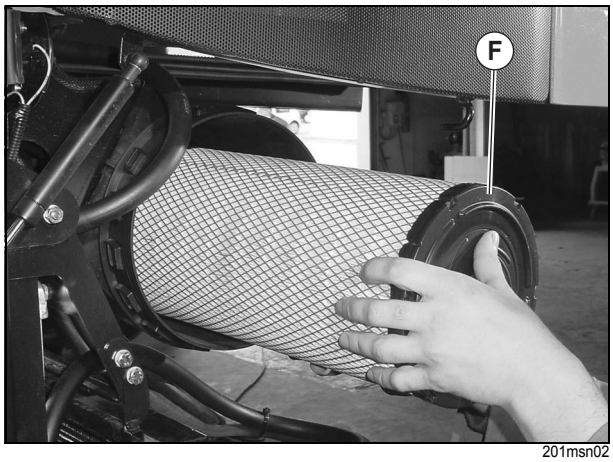
Fit the new filters in the filter housing.

- During fitting, make sure that the arrows are pointing upwards.
- Check carefully that cover (E) is correctly fitted on the body of the filter, then push back bolt (D).

Check that the ventilation tubing is in good condition and that the clips are tightly secured. Tighten them up if necessary.



201msn01



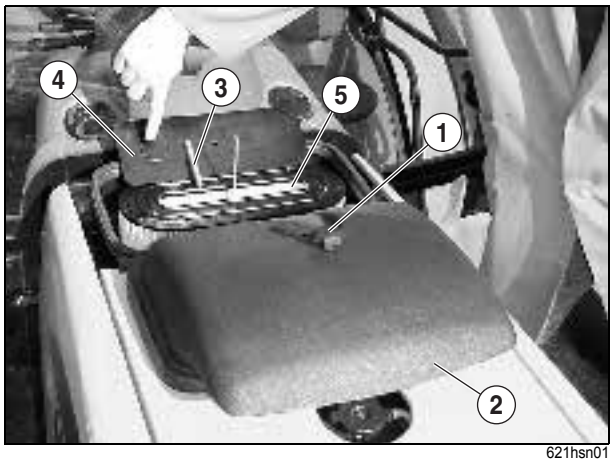
201msn02

201msn04

Operation n° 43

MAIN CAB AIR FILTER: REPLACE

- Undo nut (1).
- Remove air manifold (2), spring (3), plate (4) and air filter (5).
- Insert a new air filter and reassemble parts (4), (3), (2) and (1).
- To ensure correct assembly of plate (4), place the centre marker to be found under this plate on the air filter side.



621hsn01

Operation n° 44

DIESEL FUEL FILTER: REPLACE

Replace the filter (see operation n° 3).

Operation n° 45

HYDRAULIC SYSTEM ACCUMULATOR: CHECK

- Check the accumulator pressure.


161hpn03

ENGINE MAINTENANCE: CHECK - REPLACE

- Adjusting the valve rockers.
- Checking the injectors.
- Replacing the coolant and the thermostat.

These operations are to be carried out by your approved CLAAS agent.

Operation n° 46

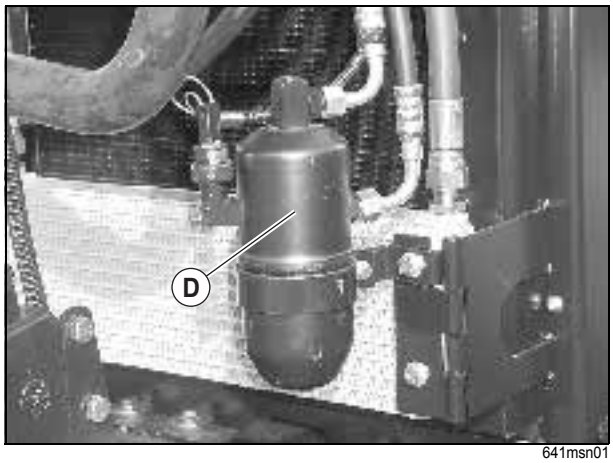
BRAKE CIRCUIT FLUID: REPLACE

Brake fluid replacement must be carried out by your CLAAS approved repairer.

Operation n° 47

AIR CONDITIONING DEHUMIDIFIER: REPLACE

- Have the dehumidifier replaced (D).



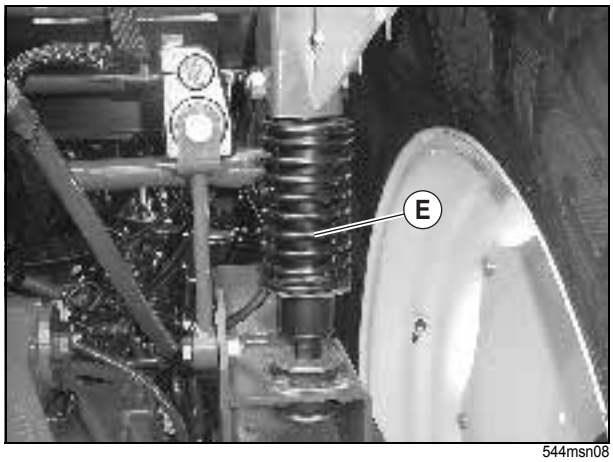
641msn01

CAB SHOCK ABSORBERS: REPLACE

- Have cab shock absorbers (E) replaced front and rear.

These operations are to be carried out by your approved CLAAS agent.

Important: Never open the air conditioning system (compressor screw, tubing) as this would would cause the loss of all the refrigerant (environmentally harmful).



544msn08

MAINTENANCE RECORD

OPERATIONS TO BE CARRIED OUT EVERY 500 H

Date	Number of hours	Operations carried out	Miscellaneous

OPERATIONS TO BE CARRIED OUT EVERY 1000 H

Date	Number of hours	Operations carried out	Miscellaneous

OPERATIONS TO BE CARRIED OUT EVERY 2000 H

Date	Number of hours	Operations carried out	Miscellaneous

M - OPERATIONS THAT ARE MANDATORY UNDER THE GUARANTEE

OPERATIONS MANDATORY UNDER THE TERMS OF THE CONTRACTUAL GUARANTEE

PRE-DELIVERY INSPECTION - HANDING OVER TO THE CUSTOMER

a) Pre-delivery inspection

Your CLAAS agent is responsible for preparing your tractor before delivery:

- Cleaning.
- General checks.
- Inspections.

He must stamp and sign it after checking and confirming the service handbook inspections.

If you wish, he can also install any certified equipment or after-sales options (air-conditioning, front power take-off and linkage, radio, etc.).

b) Handing over to the customer

Your supplier must provide you with the use and servicing handbook on delivery. He must explain this document and carry out a test, with you, in the field in order to familiarise you with your new tractor, and to answer all your questions.

The "Acknowledgement of receipt", "Pre-delivery inspection" and "Delivery to the customer" sheets (to be found in the service handbook) must be filled in and signed by the technician responsible for the handover, and signed by the user.

On of the copies of the acknowledgement of receipt remains in the service handbook which is given to the user. The other copies are intended for CLAAS.

MANDATORY ROUTINE MAINTENANCE

IMPORTANT: After the first hours of use, the engine, gearbox and front axle go through a running-in period, so it is important to observe the first service procedures as described in the following table

Operations to be carried out after	ENGINE		TRANSMISSION - HYDRAULIC SYSTEMS			FRONT AXLE
	Oil	Filter	Oil	Filters	Strainer	Oil
100 hours	X	X		X		X
500 hours	X	X	X	X	X	X

Note: For subsequent maintenance operations, refer to the service operations tables given in section L.

MANDATORY SERVICE AFTER FIRST 100 HOURS

After an operating time of 100 hours you will have to contact your CLAAS supplier and arrange a date for the first mandatory service.

ENGINE

- Drain and replace engine oil.
- Replace filter cartridge.
- Tighten manifolds.
- Tighten air filter hose clamps.
- Check that dry air filter clogging warning light is operating.
- Check pipes and connections in injection circuit.
- Remove deposits from fuel filter bowl.
- Check for leaks in cooling system.
- Tighten hose clamps on the heating and cooling circuits.
- Check coolant level in the radiator.
- Replacing the diesel strainer.

HYDRAULIC SYSTEM

- Check for leaks in all circuits.
- Replacement of hydraulic filters.

HYDROSTATIC STEERING

- Check for correct operation.

FRONT DRIVE TRAIN - FRONT AXLE

- Grease via nipples.
- Check tightness of connecting screws (engine - front drive train support, steering gear, front weights).
- Tighten wheel nuts.
- Drain and replace oil in final drives.
- Drain and replace oil in differential housing.
- Check for leaks.
- Check and adjust alignment.

TRANSMISSION - LINKAGE

- Check for leaks.
- Check oil level.
- Check - Adjustment:
  - Forward clutch
  - Foot brake
  - Handbrake
- Check brake fluid level.
- Check braking efficiency.

WHEELS AND TYRES

- Check tyre condition, inflation pressure.

ELECTRICAL SYSTEM

Battery:

- Clean and grease terminals.
- Check charge indicator light.

Instrument panel:

- Check central console operation (warning lights, alarms and digital displays).

Lighting:

- Check lights and indicators.

Heating, ventilation, cooling:

- Check operation.

Fuses:

- Check.

MANDATORY SERVICE AFTER THE FIRST 500 HOURS OR BETWEEN THE 8TH AND 10TH MONTH

At the end of the first 500 hours or between the 8th and 10th month, you must contact your CLAAS agent and make an appointment for the second technical service.

ENGINE

- Drain and replace engine oil.
- Replace filter cartridge.
- Tighten manifolds.
- Tighten air filter hose clamps.
- Check that dry air filter clogging warning light is operating.
- Check pipes and connections in injection circuit.
- Replacement of diesel filters.
- Check for leaks in cooling system.
- Tighten hose clamps on the heating and cooling circuits.
- Check coolant level in the radiator.

HYDRAULIC SYSTEM

- Check for leaks in all circuits.
- Remplacement of the hydraulic filters and the intake strainer.

HYDROSTATIC STEERING

- Check for correct operation.

FRONT DRIVE TRAIN - FRONT AXLE

- Grease via nipples.
- Check tightness of connecting screws (engine - front drive train support, steering gear, front weights).
- Tighten wheel nuts.
- Drain and replace oil in final drives.
- Drain and replace oil in differential housing.
- Check for leaks.

TRANSMISSION - LINKAGE

- Drain and refill transmission.
- Check for leaks.
- Check - Adjustment:
  - Forward clutch
  - Foot brake
  - Handbrake
- Check level of brake fluid.
- Check braking efficiency.

WHEELS AND TYRES

- Check tyre condition, inflation pressure.

ELECTRICAL SYSTEM

Battery:

- Clean and grease terminals.
- Check charge indicator light.

Instrument panel:

- Check central console operation (warning lights, alarms and digital displays).

Lighting:

- Check lights and indicators.

Heating, ventilation, cooling.

- Check operation.

Fuses:

- Check.

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