Challenger
MT635B-645B-655B-665B
Agricultural Tractors

AGCO - SA - Beauvais - France - RC B562 104 539

September 2008
No. 3378976M1
Issue 2
MT600B EU
English

Foreword

We would like to welcome you to the ever-growing number of people who own a Challenger tractor; people who appreciate quality. We are proud of every tractor that leaves our factories, each being technically advanced and of a high quality.

This Operator Instruction Book contains the specifications for your new tractor. Please ensure that all operators read the instructions and follow them carefully. This will allow you to benefit from a long service life with complete safety and peace of mind. The pages that follow contain vital information on your tractor; please read them carefully.

Your Challenger dealer will guarantee you quality servicing and will provide you with all the assistance you need. When it comes to servicing, remember that your dealer knows your tractor best and that he wants you to be completely satisfied.

Please leave this Operator Instruction Book in the tractor if resold. The subsequent owner will need the information it contains.

All information and specifications in this Book are up to date at the time of publication. However, our ongoing policy to improve our products obliges us to reserve the right to make alterations at any time without notice.

Please note that this Book relates to several models and refers to both standard and optional equipment. You may therefore find details relating to equipment that is not fitted on your tractor.

Challenger, Beauvais

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Chapter 1

TRACTOR IDENTIFICATION

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1.1 - SERIAL NUMBER

IMPORTANT: PLEASE QUOTE THE SERIAL NUMBER OF YOUR TRACTOR IN ALL CORRESPONDENCE WITH YOUR DEALER OR AGENT.

Registration plate (according to country)

OIB-06-02034

Fig. 1

Name plate with serial number (according to country).

OIB-06-02035

Fig. 2

Front axle serial number

Z4A-1631-11-05

Fig. 3

"Sisu" engine serial number

Z4A-1630-11-05

Fig. 4

Cab serial number

Z3A-702-07-04

Fig. 5

1 . TRACTOR IDENTIFICATION

MODEL: .....
.....

SERIAL NUMBER: .....
.....

ENGINE SERIAL NUMBER: .....
.....

OWNER NAME AND ADDRESS (if appropriate):
.....
.....
.....
.....
.....
.....

DEALER: .....
.....
.....

STREET: .....

TOWN: .....

COUNTY: .....

POSTAL CODE: .....

DEALER CODE: .....
.....

TRACTOR RECEIVED FROM:
(tick one of the following)

.....FACTORY

.....OTHER DEALER (transfer)

Chapter 2

INTRODUCTION - SAFETY INSTRUCTIONS AND WARRANTY

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2.1 - INTRODUCTION

The Safety chapter in the Operator Instruction Book highlights certain basic safety-related situations which may be encountered during the operation and normal servicing of the tractor and provides the information needed to handle these situations. This chapter SUPPLEMENTS any safety instructions given in other chapters of this book.

It may be necessary to take additional precautions, depending on the equipment used and the working conditions on the site or in the servicing area. AGCO can under no circumstances exercise direct control over the commissioning, operation, inspection, lubrication or servicing of the tractor. It is therefore YOUR responsibility to take suitable safety precautions in such areas.

NOTE: This book is published and distributed worldwide and the availability of the equipment indicated, whether on the basic tractor or as accessories, may vary according to the country in which the tractor is used. To find out which equipment is available in a given region, contact an AGCO dealer.

The purpose of this book is to allow the owner and the operator to run the tractor safely. Providing they follow the instructions carefully, the tractor will give many years of service in the AGCO tradition.

Commissioning the equipment on the user's premises enables the dealer to ensure that these operating and servicing instructions are properly understood. Always consult the dealer if there is any part of this book that you do not understand. It is important for these instructions to be understood and followed.

Daily servicing should become a routine, and a logbook of operating hours should be kept.

When new spare parts are required, it is important to use only AGCO original spare parts. AGCO dealers supply only genuine original parts and can offer advice concerning their fitting and use.

The use of lower quality parts may cause serious damage. Customers are advised to only purchase their spare parts from an approved AGCO dealer.

Due to the considerable variation in operating conditions, it is not possible for the manufacturer to formulate complete or absolute assertions in its publications concerning the performance or operating methods of its machines or accept liability for any loss or damage which may result from such assertions or possible errors or omissions.

If the tractor is to be used in abnormal conditions which could cause damage (use in deep water or in paddy fields for instance), you should consult your AGCO dealer to obtain special instructions to prevent the warranty from becoming void.

These tractors are designed only for usual farming activities (intended use).

Use for any other activity is considered to be contrary to the intended use. AGCO disclaims all liability in the event of material damage or physical injury resulting from improper use, the consequences of which shall be borne by the user alone.

Conformance with and strict adherence to the operating, servicing and repair requirements specified by AGCO are also vital elements of the intended use.

These tractors must only be used, serviced and repaired by personnel who have full knowledge of their specific features and are aware of the applicable safety rules (prevention of accidents).

Customers are strongly advised to contact an AGCO dealer in the event of after-sale problems and for any adjustments which may be necessary.

2.1.1 - Pre-delivery inspection, commissioning at the user's premises and warranty

When selling new products to its dealers, the manufacturer provides a warranty which, subject to certain conditions, guarantees that the goods are free from defects in material and workmanship. Since this book is published worldwide, it is impossible to detail the exact terms and conditions of warranty that apply to a retail customer in any particular country.

Purchasers of new AGCO equipment should therefore request full details from their supplying dealer.

In accordance with the manufacturer's policy of continuous improvement of its products, alterations to the specifications of machines may be made at any time without notice.

The manufacturer disclaims all liability for discrepancies which may occur between the specifications of its products and the descriptions thereof contained in its publications.

The dealer is required to carry out certain activities when supplying a new AGCO tractor. These consist of carrying out a full pre-delivery inspection to ensure that the tractor supplied is ready for immediate use, and providing full instructions to the user in the basic principles of operation and servicing of the tractor. These instructions will cover instruments and controls, and routine servicing and safety precautions. All persons who will be involved in the operation and servicing of the tractor should be present when these instructions are given.

NOTE: AGCO disclaims all liability to any claim resulting from the fitting of non-approved parts, accessories, implements or equipment or unauthorised modifications or alterations.

2.1.2 - Warranty procedure

Correct commissioning on the user's premises and routine servicing help to prevent breakdowns. However, if operating problems do occur during the warranty period, follow this procedure:

Immediately inform the dealer you purchased the tractor from, stating the model and serial number. Do not delay, as even if the defect is covered by the original warranty, the coverage may no longer apply if the repair is not carried out immediately.

Provide the dealer with as much information as possible. The dealer will need to know how many hours the tractor has been in service, what type of work it is used for and the symptoms of the problem.

It should be noted that routine servicing operations such as tuning, brake and clutch adjustment and the supplies used for the tractor servicing (oil, filters, fuel and antifreeze) are not covered by the warranty.

Warning concerning spare parts

Parts other than AGCO parts are likely to be of lower quality. AGCO disclaims all liability in the event of loss or damage arising as a result of such parts being fitted. The manufacturer's warranty may also become void if such parts are fitted during the normal warranty period.

2.1.3 - Using the tractor in another region

Only the AGCO dealer from whom the tractor was purchased is liable for the protection provided by the warranty. Any repairs should, wherever possible, always be carried out by this dealer. If, however, the owner moves to another region or if the tractor is to be used temporarily at a location a long way from the dealer from whom it was bought, it is advisable to ask this dealer for the name and address of the AGCO dealer closest to the new address and arrange to have any obligations remaining to be fulfilled under the warranty transferred to this dealer.

If the customer leaves the region covered by the original dealer without having taken these steps, the new dealer will offer its services if needed, but may invoice them at the normal rate unless:

- the customer has clearly stated that the warranty period has not expired, and
- the repair dealer has been given the possibility of taking the necessary steps with the selling dealer.

2.1.4 - Servicing after the warranty period

During the warranty period, all servicing and repair work must be carried out by the AGCO dealer, who will carefully carry out detailed checks of the progress and performance of the new tractor.

To obtain best results from an AGCO tractor, it is important to continue regular servicing and periodic inspection after the warranty has expired. All major overhaul work on the tractor must be carried out by a local AGCO dealer. An experienced technician will detect any problems which may arise between one overhaul and the next.

Mechanics regularly follow training courses to update their knowledge of the product and servicing and repair techniques, and the use of special modern implements and equipment for troubleshooting. They receive regular Service Bulletins and have access to all the workshop manuals and technical publications required to carry out repairs or servicing in accordance with the quality standards required by AGCO.

2.2 - SAFETY - SYMBOLS AND TERMS

This Safety Alert Symbol means CAUTION! BE ALERT! YOUR SAFETY DEPENDS ON IT!

The safety alert symbol identifies important safety notices on machines, safety signs, in manuals or elsewhere. When you see this symbol, be alert to the risk of personal injury or death. Follow the instructions in the safety notice.

SAFETY is paramount! Why?

- ACCIDENTS DISABLE AND KILL
- ACCIDENTS ARE COSTLY
- ACCIDENTS CAN BE AVOIDED

2.3 - TRACTOR AND IMPLEMENTS

The tractor is a source of power - Mechanical - Hydraulic

- On its own, the tractor is of little practical value. Only when used in conjunction with an implement or other equipment does it become a working unit.
- This instruction book has been compiled to explain the safe working practices that are associated with basic tractor operation.
- It does not cover all operation and safety instructions relevant to the implements and equipment that may be fitted at the time of tractor delivery or later.
- It is essential that operators use and understand the relevant instruction books relating to these implements and equipment.

2.4 - MAXIMUM TRAVEL SPEEDS

DANGER: Road use of agricultural tractors is subject to speed restrictions depending on the bulkiness of the equipment and weight of the transported load. Consult the regulations in force in the relevant countries.

2.5 - NOTE TO THE OPERATOR

It is your responsibility to read and understand the Safety chapter in this book before starting your tractor. Follow these safety instructions step by step throughout your working day.

When reading this chapter, you will notice that illustrations have been used to highlight certain situations. Each illustration is numbered and the same number appears in the text, in parentheses. The number is placed at the end of the written text that refers to the illustration.

Remember that you alone are responsible for safety. Good safety practices protect not only you, but also bystanders. Study the features in this book with care and make them an integral part of your safety programme. Keep in mind that this Safety chapter concerns only the type of machine you have just purchased. Also note all the usual protective measures which should be taken when working and, above all -

REMEMBER THAT SAFETY DEPENDS ON YOU. YOU CAN PREVENT ACCIDENTS WHICH COULD CAUSE SERIOUS INJURY OR DEATH.

2.6 - DANGER, WARNING AND CAUTION

Whenever you see the words and symbols shown below used in this book or on decals, you MUST apply their instructions as they concern personal safety.

DANGER: This symbol, accompanied by the word DANGER, indicates an imminent danger, which, if not prevented, may result in DEATH OR VERY SERIOUS INJURY.

WARNING: This symbol, accompanied by the word WARNING, indicates a potential danger, which, if not prevented, may result in DEATH OR SERIOUS INJURY.

CAUTION: This symbol, accompanied by the word CAUTION, indicates a potential risk, which, if not avoided, may result in MINOR INJURY.

IMPORTANT: The word IMPORTANT is used to identify special instructions or procedures which, if not strictly observed, may cause damage to, or destruction of the machine, the procedure being undertaken or the surroundings.

NOTE: The word NOTE is used to highlight particularly interesting information that might enable more efficient or convenient operation or repair.

2.7 - DECALS

WARNING: DO NOT REMOVE OR OBSCURE decals indicating Danger, Warning, Caution or Instruction.

Replace any Danger, Warning, Caution or Instruction decals which are illegible or missing. Replacement decals are available from your dealer in the event of loss or damage. The actual location of these safety decals is illustrated at the end of this chapter.

If a second-hand tractor has been purchased, refer to the illustrations at the end of this book to ensure that all the safety decals are in the correct position and are legible.

2.8 - SAFETY PROCEDURE

2.8.1 - Ensuring proper operation

For proper operation of an agricultural tractor, you must be a qualified and approved operator. To be qualified you must understand the written instructions supplied in this manual, have training in how to operate the tractor and know the safety rules and regulations applicable to the job.

Some regulations specify that no one under the age of 16, for example, may operate power machinery. This includes tractors. It is your responsibility to know what these regulations are and to observe them in the operating area or situation.

These regulations include, but are not limited to, the following instructions for safe tractor operation.

WARNING: The operator must not drink alcohol or take any medication that may affect his concentration or coordination. If taking medication, whether prescribed or not, the operator must seek medical advice with regard to his ability to operate machinery safely.

2.8.2 - Observe the following instructions

- **DO NOT ALLOW** children or unqualified persons to operate the tractor. Move unauthorised persons away from the work area.
- Always wear your seat belt securely fastened.
- Where possible, avoid operating the tractor near ditches, embankments and holes. Reduce speed when negotiating turns and slopes and on rough, slippery or muddy surfaces.
- Stay off slopes that are too steep for safe operation.
- Watch where you are going, especially at row ends, on roads and around trees.
- The passenger seat is only intended for short periods of use.
- Do not allow children to use the passenger seat.
- **DO NOT PERMIT** others to ride on the tractor or the implement unless an approved passenger seat is fitted.
- Only hitch equipment to the drawbar and recommended hitch points and never above the centre line of the rear axle.

- Operate the tractor smoothly - avoid jerky turns, starts or stops. When the tractor is stopped, apply the handbrake securely. Lower the implement and remove the ignition key.
- **DO NOT MODIFY OR REMOVE** any part of the equipment and **DO NOT USE** attachments unless they are properly adapted to suit your tractor.

2.9 - PROTECTION

2.9.1 - Cab

The ROPS (Roll Over Protective Structure) has been designed for this tractor series and meets all the legal safety and sound requirements.

The ROPS conforms to the various international safety standards. The ROPS must **NEVER** be drilled or modified to enable installation of accessories or implements. Welding components is **NOT PERMITTED. DO NOT ATTACH** chains or ropes to the main frame of the ROPS for pulling purposes.

If additional controls or displays are to be added to the operator's area, contact your AGCO dealer for information.

The ROPS and the seat belt are effective in reducing injuries during overturn accidents. Wearing the seat belt is an important part of this protection.

- Always wear your seat belt and ensure it is correctly adjusted.
- Check the seat belt for damage. A damaged seat belt must be replaced (Fig. 1).

Z2-529-05-03

Fig. 1

2.9.2 - Damage to ROPS cab

If there has been an accident with the tractor or if the tractor has overturned, the ROPS must be replaced, NOT repaired.

DO NOT USE the tractor if the ROPS has been damaged.

2.10 - PREPARING FOR SAFE OPERATION

2.10.1 - Know your equipment

It is important to know the tractor and how to operate all its accessories, implements and additional equipment. It is also important to know how to use all the controls, gauges and dials, and to know the rated load capacity, speed range, braking and steering characteristics, turning radius and operating clearances.

Remember that rain, snow, ice, loose gravel, soft ground etc. can change the performance of the tractor.

In poor conditions, slow down and be extra careful, and engage four-wheel drive if fitted.

Study the **DANGER**, **WARNING** and **CAUTION** safety symbols on the tractor and all the information signs.

READ THIS OPERATOR INSTRUCTION BOOK CAREFULLY BEFORE STARTING THE ENGINE.
CONSULT THE BOOK BEFORE YOU START WORK (Fig. 2).

Z2-530-05-03

Fig. 2

IF THERE IS SOMETHING IN THE BOOK YOU DO NOT UNDERSTAND, ASK SOMEONE (for example your dealer) TO EXPLAIN IT TO YOU.

This book covers general safety practice for agricultural tractors. It must always be kept with the tractor. For extra copies, contact your AGCO dealer.

2.10.2 - Protect yourself

Wear all protective clothing and equipment with which you are provided or which is appropriate for certain working conditions. Do not take any risks (Fig. 3).

For example, you may need:

- A safety helmet.
- Goggles or a face shield.
- Ear protection.
- A respirator or filter mask.
- Inclement weather clothing.
- Reflective clothing.
- Heavy gloves (neoprene for chemicals, leather for rough work).
- Safety shoes.

DO NOT wear loose clothing, jewellery or other items and tie up long hair which could catch on controls or other parts of the tractor.

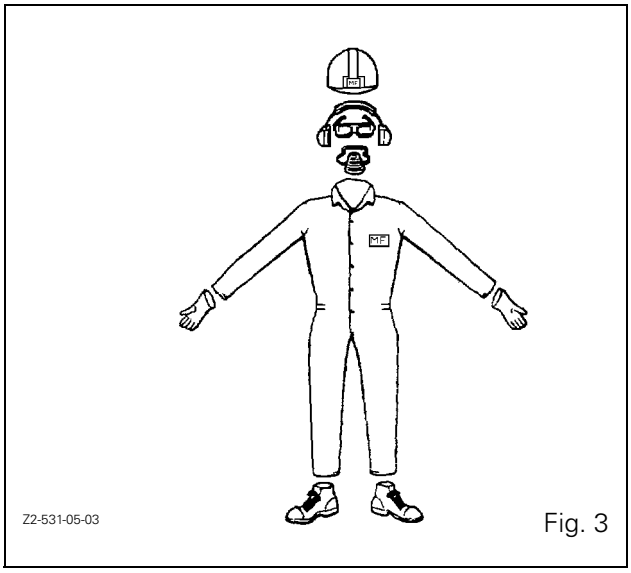

Fig. 3

Learn where fire extinguishers and first aid or emergency equipment is kept and where to get help in a hurry. Make sure you know how to use this equipment (Fig. 4).

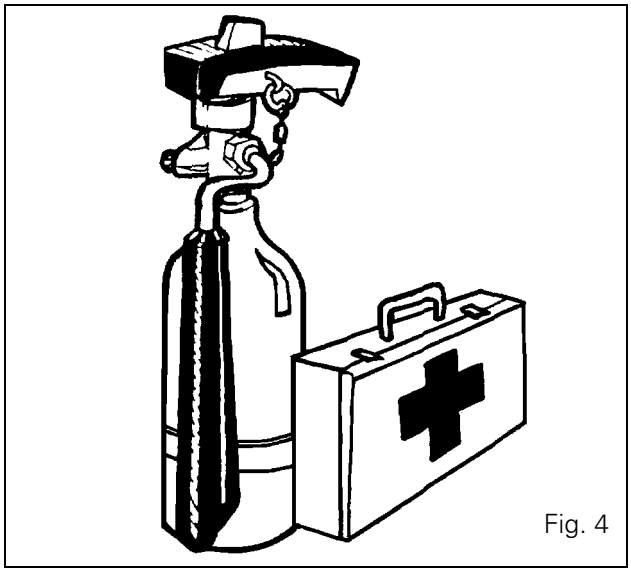
Fig. 4

2.10.3 - Use all available protective and safety devices

Keep all protective devices correctly attached in their correct places. Ensure that all protective devices, guards and safety signals are fitted as required and are in good condition.

For your own safety and that of those around you, the tractor should be fitted with the following:

- Seat belt.
- PTO shield.

Your tractor may also need:

- Rear view mirror.
- Fire extinguisher.
- Emergency warning triangle, guards, backup alarm, lighting devices and decals.

It is important to know and use the devices which allow for safe operation of the tractor. Make sure all equipment appropriate to your operation is in place and in good working order. **DO NOT REMOVE OR DISCONNECT** any safety device.

2.10.4 - Equipment check

Before you begin your working day, take time to check the tractor and ensure that all systems are in good operational condition.

- **DO NOT SMOKE** while refuelling the tractor. Keep away from naked flames (Fig. 5).
- Stop the engine and wait for it to cool before refuelling.

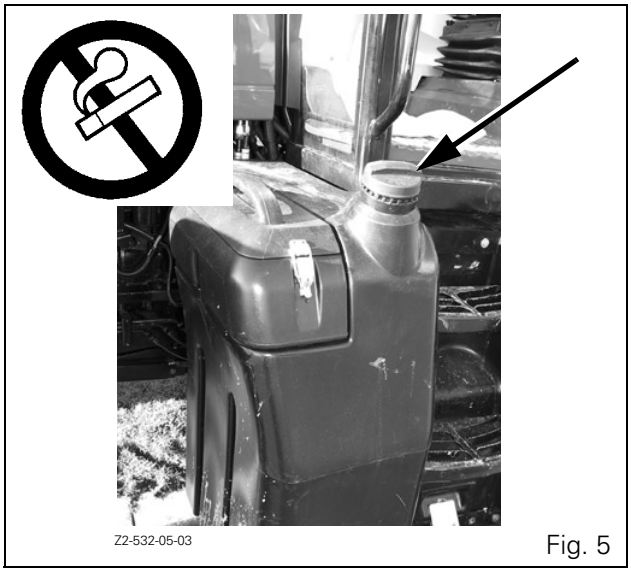

Fig. 5

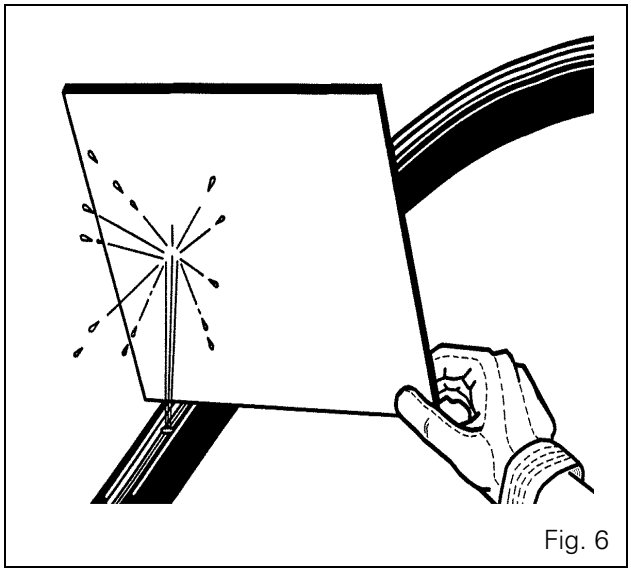
Fig. 6

- Check for loose, broken, missing or damaged parts. Ensure everything has been properly repaired. Ensure that all safety devices are in place.
- Check that the seat belt is in good condition. A damaged seat belt must be replaced.
- Ensure that implements and equipment are properly installed and that the tractor and implement PTO (rpm) ratios are correct.
- Check the condition and pressure of tyres (absence of cuts and bulges). Replace worn or damaged tyres. Check that the hand and foot brakes are operating correctly. Adjust if necessary.
- Check the oil level. Top up the oil if necessary.
- Perform all servicing procedures outlined in the Servicing and Adjustments chapter in this book.
- Check that the PTO shaft locking devices are engaged.
- Check that the tractor PTO guard and the shaft guards are in place and operating correctly.
- Check the tractor and implement hydraulic circuit. Ensure any damaged or leaking parts are repaired or replaced.

WARNING: Fuel or hydraulic fluid under pressure can penetrate the skin or eyes and cause serious personal injury, blindness or death.

Fluid leaks under pressure may not be visible. Use a piece of cardboard or wood to detect leaks. DO NOT USE YOUR BARE HANDS. Wear safety goggles for eye protection. If any fluid penetrates the skin, seek medical advice within a few hours from a doctor familiar with this type of injury, as surgery will be necessary (Fig. 6).

Before applying pressure to the fuel or hydraulic circuit, ensure that all connections are tight and that lines, pipes and hoses are free from damage. Relieve the pressure before disconnecting fuel or hydraulic circuits.

Make sure that all hydraulic circuits are correctly installed and not crossed.

WARNING: Liquid cooling circuits build up pressure as the engine temperature increases. Stop the engine and let the circuit cool before removing the radiator cap.

- Check the engine cooling circuit and add coolant if required.

2.10.5 - Clean the tractor

- Keep work surfaces and engine compartments clean.
- Before cleaning the machine, always lower implements to the ground, place transmission in neutral, engage the handbrake, stop the engine and remove the ignition key.
- Clean footsteps, pedals and floor. Remove grease or oil. Brush away dust and mud. In winter, scrape away snow and ice. Remember - slippery surfaces are hazardous.
- Remove or put away implements, buckets, chains and hooks.

2.10.6 - Protect the environment

- It is illegal to pollute drains, water courses or soil. Use authorised waste disposal facilities, refuse tips or garages providing facilities for the disposal of used oil. If in doubt, contact your local authority for advice.

2.11 - SERVICING THE TRACTOR

- **DO NOT SERVICE** the tractor while the engine is running or hot or if the tractor is in motion (Fig. 7).

Fig. 7

- Before making adjustments to or servicing the electrical system, disconnect the battery cables, negative (-) cable first.
- To prevent fire or explosion, keep the battery or cold weather starting aids away from naked flames. To prevent sparks which could cause explosions, use jumper cables according to instructions.
- Consult your AGCO dealer when making repairs or adjustments and have the work carried out by trained personnel.
- The implement and/or tractor must be supported on suitable blocks or stands, **NOT** a hydraulic jack.
- Check all nuts and bolts periodically for tightness, especially wheel hub and rim nuts. Tighten to the torque values stipulated.

2.12 - START

2.12.1 - Warn personnel before starting

Before starting up, walk all the way round the tractor and any attached equipment. Make sure that no one is under it, on it or close to it. Tell other workers or people nearby that the tractor is about to start. Do not start the tractor while there are people near the tractor, implements or trailed equipment.

Ensure that all bystanders, particularly children, are an adequate distance away before starting the engine.

2.12.2 - Mount and dismount safely

Always use three-point contact with the machine and face the machine when you get on it. (Three-point contact means that both hands and one foot or one hand and both feet are in contact with the machine at all times when getting on and off).

Clean your shoes and wipe your hands before getting on the tractor. Use handrails, grab handles, ladders or footsteps (if fitted) when getting on and off.

DO NOT use control levers as a handhold and never step on pedals when getting on and off.

NEVER attempt to get on or off a moving tractor. **NEVER JUMP** off a tractor when it is running except in an emergency.

2.12.3 - Start safely

WARNING: Before starting the engine, ensure there is plenty of ventilation. DO NOT operate the engine in a closed building. The exhaust fumes may cause asphyxiation.

Always start the engine from the driver's seat with all the **transmission levers** and the PTO lever in neutral.

Make sure that the tractor brake pedals are locked together at all times unless you are making turns in the field which require independent use of the brakes. Make sure the brakes are properly adjusted so that both brakes engage at the same time.

Adjust the seat, fasten the seat belt (as specified in the book), apply the handbrake and put all controls in neutral before starting the engine.

DANGER: Start the engine with the starter key, from the driver's seat only. DO NOT ATTEMPT to start the engine by short-circuiting the starter terminals. The machine will start in gear if the neutral start circuit is bypassed. This could cause serious injury or death to anyone in the vicinity of the tractor (Fig. 8).

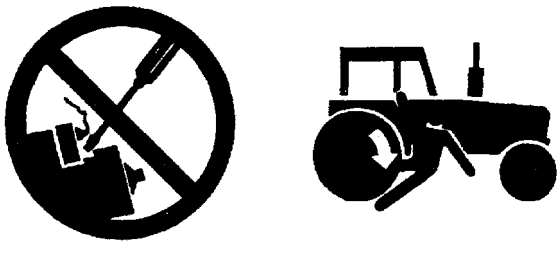

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Fig. 8

Fig. 9

2.12.4 - Follow recommended start-up procedures

Follow the start-up procedures recommended in the Operation chapter of this Operator Instruction Book. This chapter includes normal starting, cold starting and the use of starter fluids.

2.12.5 - Test the controls

After starting, check all gauges and lights once again. Make sure everything is functioning correctly. If the tractor does not respond correctly when each control is operated, **DO NOT USE** the machine until the fault is rectified.

Ensure that the starter solenoid cover is still in position.

2.12.6 - Starting fluid

WARNING: It is very important that you read and follow the instructions on the label before using starter fluid. DO NOT use aerosol cans of starter fluid on tractors with the thermostat connected to the electrical system. Ether combined with thermostat can cause an explosion with damage to engine, personal injury, or both.

Handle starter fluid carefully. Starter fluid must only be used in conjunction with an ether-start aid fitted as original equipment by the manufacturer or installed by the dealer as an accessory. In cases of tractors being fitted with glow plugs or a thermostat, these must be removed prior to the installation of an ether-start aid (Fig. 9).

If aerosol cans of starting fluid are to be used, the thermostat must be disconnected. Remove the wire from the thermostat which will be found on the manifold. Tape the end of the wire to prevent an electrical short circuit.

2.13 - WORKING SAFELY

WARNING: An unbalanced tractor could overturn and cause injury or death.

Make sure that front frame counterweights, wheel weights and wheel ballasts are used as recommended by the manufacturer. DO NOT add extra counterweights to compensate for an overloaded tractor; it is advisable to reduce the load. Keep all parts of your body inside the cab while operating the tractor.

2.13.1 - Make the right moves

Ensure that the tractor is ready for the work to be carried out. Make sure you know the tractor nominal load capacities and never exceed them. Ensure that any equipment or implements you intend to use **DO NOT EXCEED** the load rating of the tractor. Ensure that the ratio between the tractor and implement PTO speed is correct.

Keep in mind that tractors are designed to operate on uneven, unpaved, bumpy or sloping surfaces. Operating conditions can reduce the amount of weight you should carry or pull.

2.13.2 - Safe operating practices

- Operate the controls smoothly - do not jerk the steering wheel or other controls.
- **NEVER** get on or off a moving tractor. Keep a firm grip on the steering wheel at all times, with your thumbs clear of the spokes when driving the tractor.
- Make sure you have adequate clearance in all directions for the tractor and implement.
- **DO NOT** play with a tractor or equipment. Use only for the intended purpose.
- **ALWAYS OPERATE** the controls from the driver's seat.
- Before getting off, always disengage the PTO, lower all attachments and implements to the ground, set the tractor to neutral, activate the ParkLock, stop the engine and remove the ignition key.

NOTE: DO NOT TOUCH, lean on or reach through any implement mechanism or permit others to do so.

Stay alert! If a part breaks, loosens or does not operate correctly, stop work, switch off the engine, check the machine and carry out any necessary adjustments or repairs before resuming work.

2.13.3 - Safety of bystanders

Watch out for others. **DO NOT** allow inexperienced or unqualified people to operate the tractor. They may cause injury to themselves or to others.

WARNING: A tractor is a personal piece of machinery. DO NOT allow others to drive the tractor or to use the implement (Fig. 10). DO NOT ALLOW another person to get on the implements or any other equipment, including trailers, except in the case of harvesters specially designed for this purpose (for the harvest itself and not for transport purposes). Space should be provided on such equipment so that this type of transport can be carried out in complete safety. DO NOT ALLOW children on the tractor.

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Fig. 10

- **Be certain that you can control both the speed and the steering of the tractor before moving**. Move slowly until you are sure that everything is operating correctly. After starting, check the steering wheel by turning it to the right and to the left. Be certain that you have full control of the steering and brakes. If the differential is engaged, **DO NOT** increase the speed of the tractor or turn the tractor until the differential lock is disengaged.
- **DO NOT LIFT** a load over anyone.
- Keep others away from the working area. **DO NOT ALLOW** others to stand beside or walk beneath a raised implement (Fig. 11).

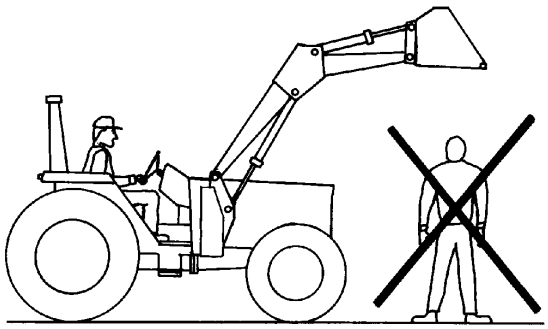

Fig. 11

- **DO NOT** lift objects that do not fit safely into the bucket. Obtain the correct equipment.
- When using a loader, avoid sudden stops, starts, turns or changes in direction. Keep loads close to the ground when transporting.
- **DO NOT** stand (or allow anyone else to stand) in front of, under or behind loaded or loading equipment. **DO NOT DRIVE** a tractor up to someone standing in front of a fixed object.
- Keep others away from the moving parts of hitches, drawbars, lift arms, PTO shafts, rams, belts, pulleys and other moving parts. Keep all shields and guards in place.

WARNING: DO NOT STAND, or allow anyone else to stand, between the tractor and implement unless the engine is turned off, the handbrake is engaged, the transmission control lever is in neutral and all attachments or implements are lowered to the ground.

2.13.4 - Risk of overturning

In the event that a tractor fitted with a cab overturns, hold the steering wheel firmly and do not attempt to leave the seat until the tractor has come to a complete stop (Fig. 12). If the doors of the cab are obstructed, leave through the rear window or roof hatch.

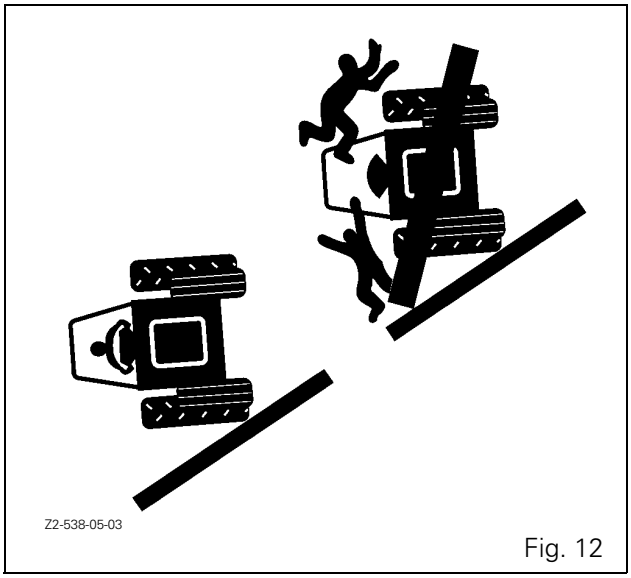

Fig. 12

Fig. 13: Do not operate near the edge of ditches or banks. The distance from the edge should always be equal to or greater than the height of the bank, to prevent it from collapsing.

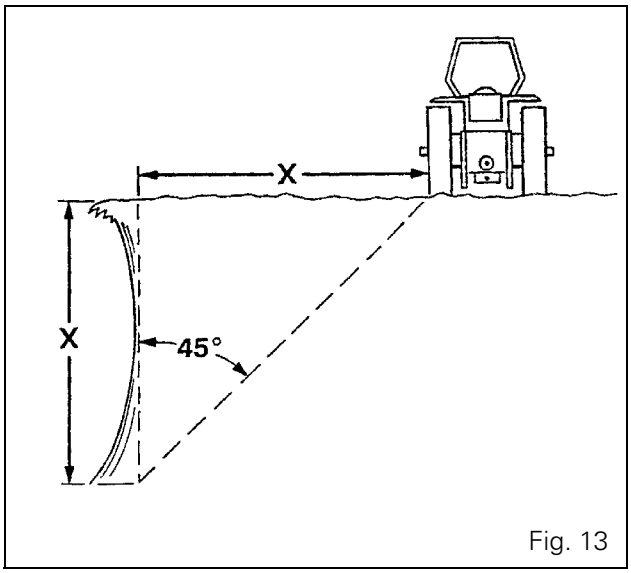

Fig. 13

2.13.5 - To avoid overturning

- Set the wheel track at the widest appropriate setting for the work being carried out.
- Lock the brake pedals together before driving at transport speed.
- Reduce speed according to the operating conditions. If the tractor is fitted with a front-end loader, carry the bucket and load as low as possible.
- Make wide turns at reduced speed. Do not let the tractor bounce. You may lose steering control.
- Do not pull a load that is too heavy for the tractor. It could run down the slope or the tractor could jack-knife around a trailed load.
- Do not brake suddenly. Apply brakes smoothly and gradually.
- When driving down a slope, use the throttle control to slow the tractor engine and choose the same gear ratio as used when climbing a slope. Shift into gear before you start downhill.
- Engage four-wheel drive (if fitted) to enable four-wheel braking.

WARNING: DO NOT disengage the clutch or attempt to shift gear after you have started downhill.

- The tractor is less likely to overturn if you drive up or down a steep slope rather than driving across it.
- Avoid steep slopes whenever possible. If this is not possible, avoid holes and dips when driving downhill. Avoid stumps, stones, bumps and raised areas when driving uphill. Keep the tractor behind the shear line when working close to ditches or banks (Fig. 13). Avoid ditches, embankments and river banks which might give way.
- If you must drive on a steep slope, avoid turning at the top of the slope. Slow down and turn in a wide turning circle. Drive straight on uphill or downhill slopes and never drive across them. Keep the heavier end of the tractor facing towards the top of the slope when driving up and down it.
- If a tractor fitted with lateral implements is used on a steep slope, the implement must always face up the slope. Do not raise the implements. Keep them as low to the ground as possible when crossing a slope.
- When towing a load at transport speed, lock the drawbar in the centre position and use a safety chain.
- DO NOT use the tractor to round up farm animals.

2.13.6 - To prevent rear overturning

WARNING: Hitching to the rear axle or any other point above the swinging drawbar can cause a rear overturn.

- **DO NOT PULL** anything using the top link connection or from any point above the rear axle. Always use an approved AGCO drawbar and only use a lockable drawbar pin.
- High hitching can cause rear overturn, which may cause serious injury or death. Only hitch loads to the drawbar.
- Only use a three-point linkage drawbar when stays are fitted to keep the drawbar in the down position.
- Use front counterweights to increase tractor stability when towing heavy loads or to counterbalance a heavy, rear-mounted implement.
- Start forward slowly and gradually increase your speed. **DO NOT** reverse or release the clutch. If the tractor is attached to a heavy load or immovable object, the wrong gear ratio may cause the tractor to overturn.
- If the front end of the tractor starts to lift, reduce your speed and, if necessary, disengage the clutch.

- If the tractor is bogged down in mud or frozen to the ground, **DO NOT ATTEMPT** to drive forward. The tractor could rotate around its rear wheels and overturn. Lift any attached implement and attempt to **REVERSE**. If this is not possible, tow the tractor out with another vehicle.
- If you get stuck in a ditch, **REVERSE**, if possible. If you must go forward, do so slowly and carefully.
- A bare tractor or a tractor with rear-mounted attachments should turn around and travel forward downhill.
- A tractor with a loaded front-end bucket should reverse downhill. Keep the loader bucket as low as possible.
- Always keep the tractor in gear when going downhill. **DO NOT ALLOW** the tractor to coast with clutch disengaged or transmission in neutral.

2.13.7 - Emergency handbrake

IMPORTANT: If the brakes fail and in an emergency situation, use the emergency handbrake located to the left of the driver (Fig. 14)

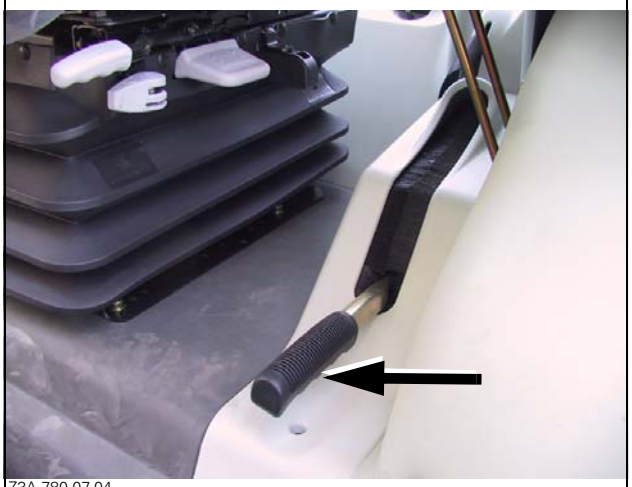
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Fig. 14

DANGER: Do not use the emergency handbrake as a parking brake. For the parking brake, use the steering wheel ParkLock brake control.

IMPORTANT: If the brakes fail, contact an approved AGCO dealer to resolve the problem.

2.13.8 - Other risks

- Ensure that the PTO shield (1) is in place when the PTO driveline is not in use (Fig. 15).

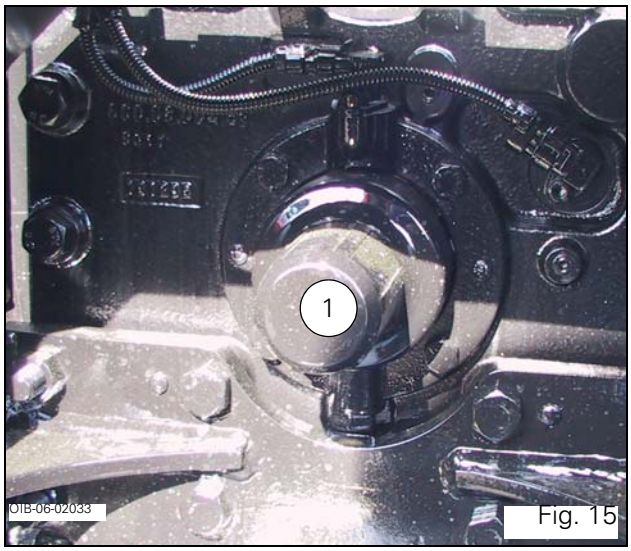

Fig. 15

- Before attaching, detaching, cleaning or adjusting PTO-driven implements, disengage the PTO, stop the engine, remove the ignition key and make sure that the PTO transmission shaft has stopped.
- Ensure that all the PTO shaft guards are in place and check the presence of all safety decals (Fig. 16).

Fig. 16

- Ensure that everyone is clear of the machine before engaging the PTO. For stationary PTO operation, place the gear lever in neutral, engage the handbrake and chock the wheels of the tractor and the implement.
- When operating mobile PTO-driven equipment, **DO NOT** leave the tractor seat until the PTO is disengaged, the transmission is in neutral, the handbrake is engaged, the engine is off and the ignition key is removed.
- **DO NOT** use PTO adapters, reducers or extensions as they extend the PTO coupler and universal joint out beyond the protection offered by the guard.

- The use of drawbars and lift rods must not allow the threads to show.

DANGER: DO NOT attempt to unplug the hydraulic connections or adjust an implement with the engine running or the PTO drive in operation. To do so may result in serious injury or death.

- When using chemicals, follow the chemical manufacturer's instructions for use, storage and disposal carefully. Also follow the manufacturer's instructions with regard to the application of chemicals on equipment.
- When operating in poor visibility conditions or at night, use the tractor headlights and reduce your ground speed (**DO NOT** use the work lights when travelling on a road because rear white lights are illegal except when reversing and may confuse following drivers).
- Operate the tractor using tyres that are of a suitable width for the particular task you are performing. To adjust tyre width, see the Servicing and Adjustments chapter.
- Reduce your speed when operating over rough or slippery ground and when foliage restricts your view.
- **DO NOT** make sharp turns at high speed.

2.13.9 - Implements and attachments

WARNING: A front-end loader (bucket or fork) must be fitted with a suitable holding device to prevent the load (bales, fence posts, rolls of fence, wire etc.) from rolling down the lift arms into the driver's compartment and crushing the driver when the loader is raised. Inadequately secured objects could also fall and injure bystanders.

- Implements fitted to the three-point hitch or to the side of the machine make a much larger arc when turning than trailed equipment. Ensure there is sufficient clearance for turning. Use only AGCO-approved equipment.
- When using attachments or implements with the tractor, be sure to read and understand the instructions in the operator instruction book for that attachment or implement and follow its safety instructions. Use only AGCO-approved equipment and implements.
- **DO NOT** overload trailed attachments or equipment. Use appropriate counterweights to maintain tractor stability. Only hitch loads to the drawbar.
- A safety chain (1) will help control trailed equipment should it be accidentally separated from the drawbar during transportation. Using the appropriate adapter parts, attach the chain to the tractor's drawbar support or any other specified anchor point. Provide only enough slack in the chain to permit turning. Contact your AGCO dealer for a chain of equal or greater strength than the weight of the trailed machine (Fig. 17).
- Ensure that all trailed parts are fitted with a safety chain linking the tractor to the implement, if required by law (Fig. 17).
- Pull only from the approved drawbars. Towing or attaching to other locations may cause the tractor to overturn (Fig. 18).

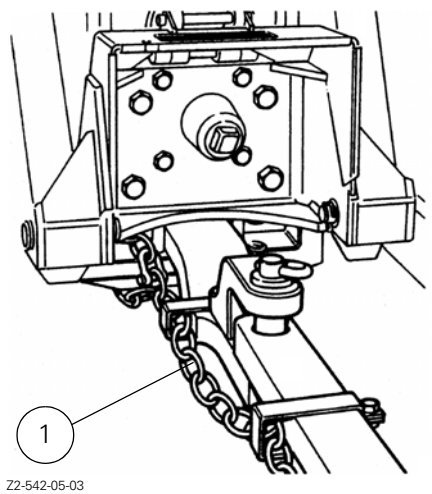

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Fig. 17

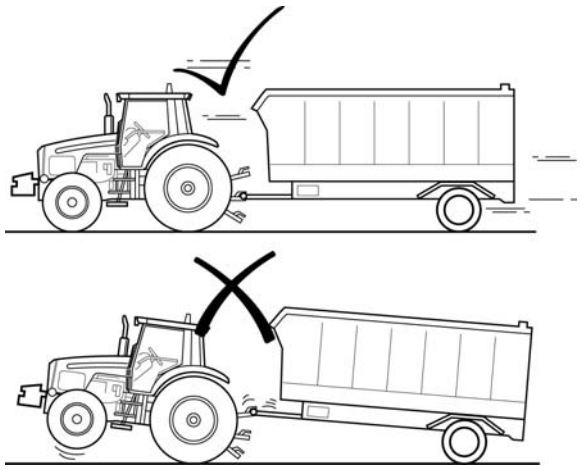

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Fig. 18

2.13.9.1 - Safety measures when towing

- For trailed equipment **WITHOUT** brakes, **DO NOT** tow this equipment:
  - at a speed exceeding the speed limit in force in the relevant country,
  - at a maximum load higher than that indicated on the name plate.
- For trailed equipment **WITH BRAKES, DO NOT** tow this equipment:
  - at a speed exceeding the speed limit in force in the relevant country,
  - at a maximum load higher than that indicated on the name plate.

NOTE: The tractor requires the correct trailer braking equipment to be installed and connected to the equipment.

Stopping distance increases with speed and weight of trailed loads and on hills and slopes.
Towed loads with or without brakes that are too heavy for the tractor or are towed too fast can cause loss of control.
Keep in mind the total weight of the equipment and its load.

2.13.10 - Tractor towing

Refer to Chapter 4.

WARNING: Towing: the following instructions MUST be followed when towing:

If the engine is not running:

- Maximum towing speed 10 kph.
- Max. towing distance 8 km.

If the engine is running:

Towing speed is identical to that of a trailer without brakes at the speed authorised by legislation in force in the country concerned.

2.13.11 - Road use

Take the following precautions before using the tractor on a public road.

- Observe all national laws and local regulations in force relating to tractor use.
- Lock the brake pedals together.
- Place all implements in transport position and lock into place.
- Place all implements in their narrowest transport configuration.
- Disengage the PTO and differential lock.
- Make sure any required clearance flags or hazard warning lights are in place and in working order.
- Clean all reflectors and road lights, front and rear, and ensure they are in working order.
- Ensure that the tractor and equipment are fitted with emergency warning triangles and other markings recommended to improve visibility when driving on roads, unless otherwise indicated (Fig. 19).

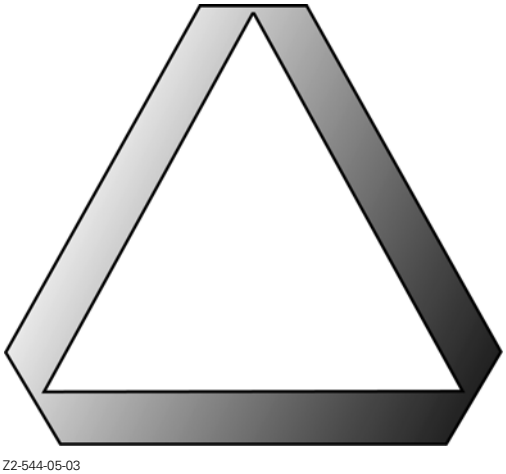

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Fig. 19

2.13.12 - Highway code

When operating the tractor on a public road, the following precautions must be taken.

WARNING: NEVER allow any passengers to ride on the tractor or trailed equipment.

- Familiarise yourself with the road you will be travelling on.
- Turn on hazard warning lights when travelling on roads, day or night, unless prohibited by law.
- Take care when towing a load at transport speed, especially if the trailed equipment is NOT fitted with brakes.
- Observe all local or national regulations regarding the permitted road speed for a tractor.
- Exercise extreme caution when transporting on snow-covered or slippery roads.
- Wait for traffic to clear before entering a public road.
- Beware of blind intersections. Slow down until you have a clear view.
- **DO NOT** attempt to pass at any intersection.
- Slow down for turns and curves.
- Make wide, gentle turns.
- Signal your intent to slow, stop or turn.
- Shift to a lower gear before going up or down hills.
- Keep the tractor in gear at all times. Do not coast with the clutch disengaged or transmission in neutral.
- Stay out of the path of oncoming traffic.
- Drive in your correct lane, keeping as near to the curb as possible.
- If traffic builds up behind you, pull off the road and let it pass.
- Drive carefully. Anticipate what other drivers might do.
- When towing a load, start braking sooner than usual and slow down gradually.
- Watch out for overhead obstructions.
- Make sure that the load does not obscure hazard warning or transport lights.

2.14 - SAFETY - AFTER OPERATION

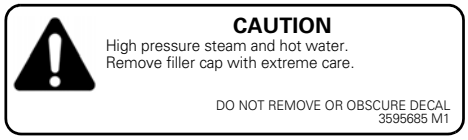
Whenever stopping, bring the tractor to a complete halt, apply the handbrake, disengage the PTO, **place the Power Shuttle lever in neutral position**, lower the implement to the ground, stop the engine and remove the ignition key **BEFORE** leaving the seat.

DANGER: Reverse shuttle control: Before leaving your seat, you must move the reverse shuttle control to NEUTRAL.

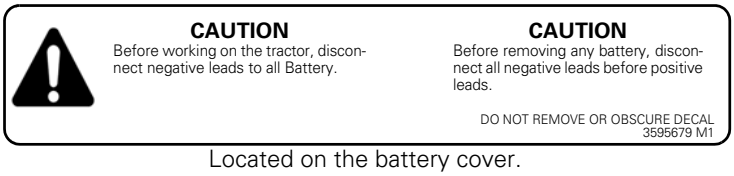
Remove the ignition key if the tractor is to be left unattended.

IMPORTANT: ParkLock electro-mechanical brake control: Engage the control in the locked position (closed padlock symbol) with the engine running and before leaving the operator's seat.

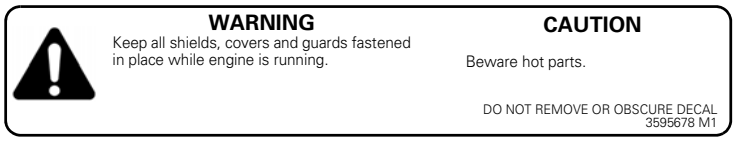
2.15 - DESCRIPTION OF DECALS



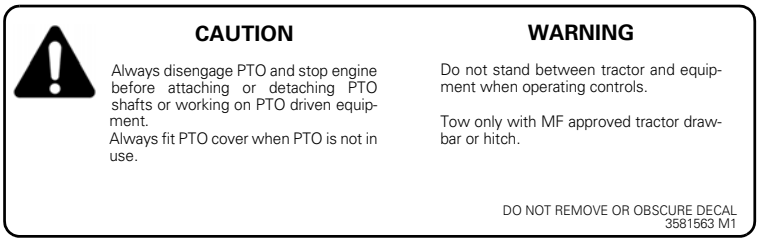
Located on top of the bonnet (access to radiator cap)



Located on the battery cover.



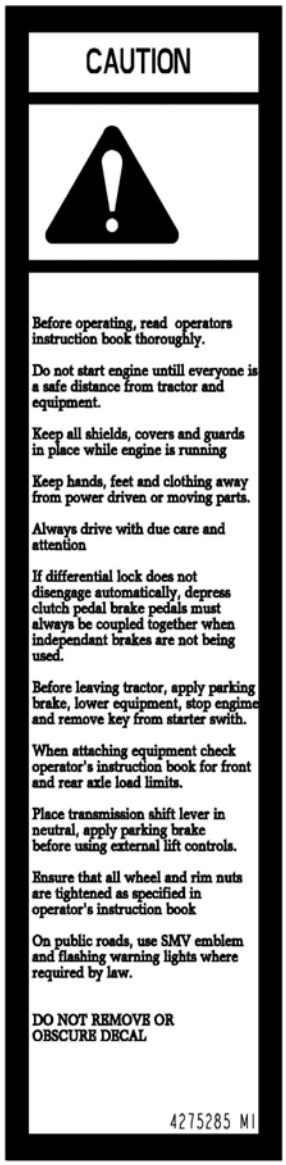
Located on the right- and left-hand sides of the bonnet



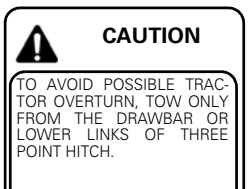
Located at the rear of the tractor

Located to the left and right of the radiator.

Located on the front windscreen



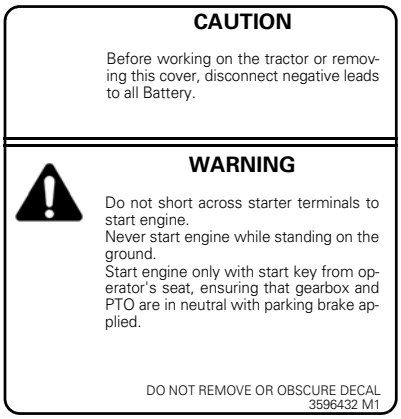
Located on the RH inner column of the cab



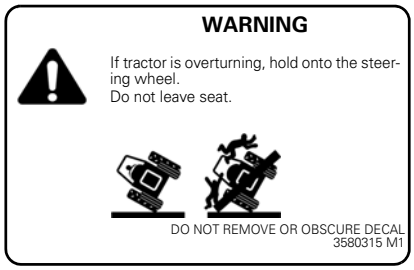
Located on the fenders to the rear of the cab

Located on the RH inner column of the cab

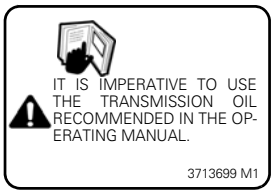
Located on the accumulator.



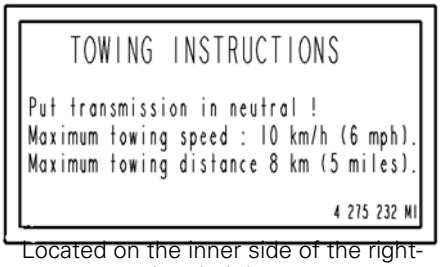
Located on the starter motor.



Located at the rear of the instructor seat.



Located on the fenders to the rear of the cab



Located on the inner side of the right-handed door.

Front linkage decals

WARNING: Read the Operator Instruction Book before starting work.

DANGER: Avoid being caught by moving parts

Chapter 3

INSTRUMENTS AND CONTROLS

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Fig. 1

3.1 - INSTRUMENT PANEL (FIG. 1)

1. Starter switch (see details in Fig. 2).
2. Control unit (see detail in Fig. 3).
   This assembly comprises the direction indicator, windscreen wiper, front windscreen and rear window washer and horn.
3. Steering wheel adjustment (see details in Fig. 24).
4. DOT MATRIX controls (see details in Fig. 10).
5. Parameter display selector switch (21 Fig. 4).
6. Main light switch.
7. Hazard warning lights indicator light and control switch.
8. Direction of travel and reverse shuttle control lever.
9. Electro-magnetic brake control (ParkLock option).

Starter switch details (Fig. 2):

1. Stop.
2. Contact position to be used for electrical equipment when the engine is not running.
3. Contact position to be used for electrical equipment when the engine is running.
4. Preheating (wait for instrument panel indicator lights to go out on the instrument panel).
5. Start-up.

NOTE: The tractor runs with the key in position (3); to disconnect all electrical equipment fully, the key must be moved back through the accessory position (1) to the stop position (2).

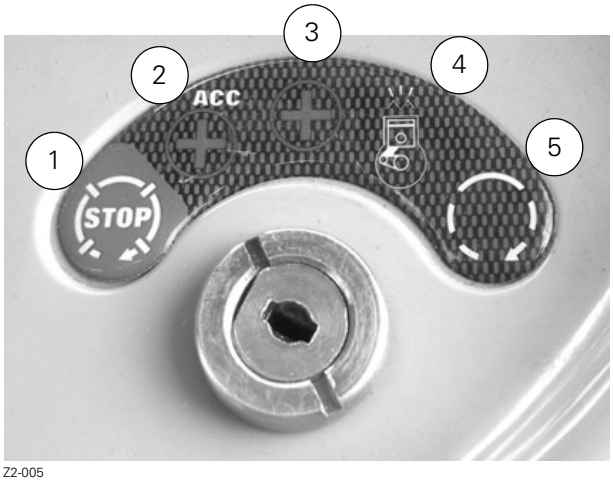

Fig. 2

Key:

1. Windscreen wiper
   - 0. Stop
   - J. Intermittent
   - I. Speed 1
   - II. Speed 2
2. Left-hand direction indicator
3. Right-hand direction indicator
4. Warning buzzer
5. Headlights flash
6. Headlights
7. Front windscreen and rear window washer

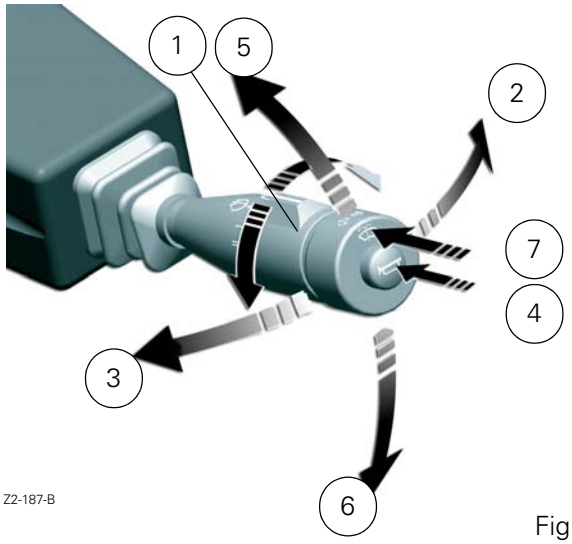

Fig. 3

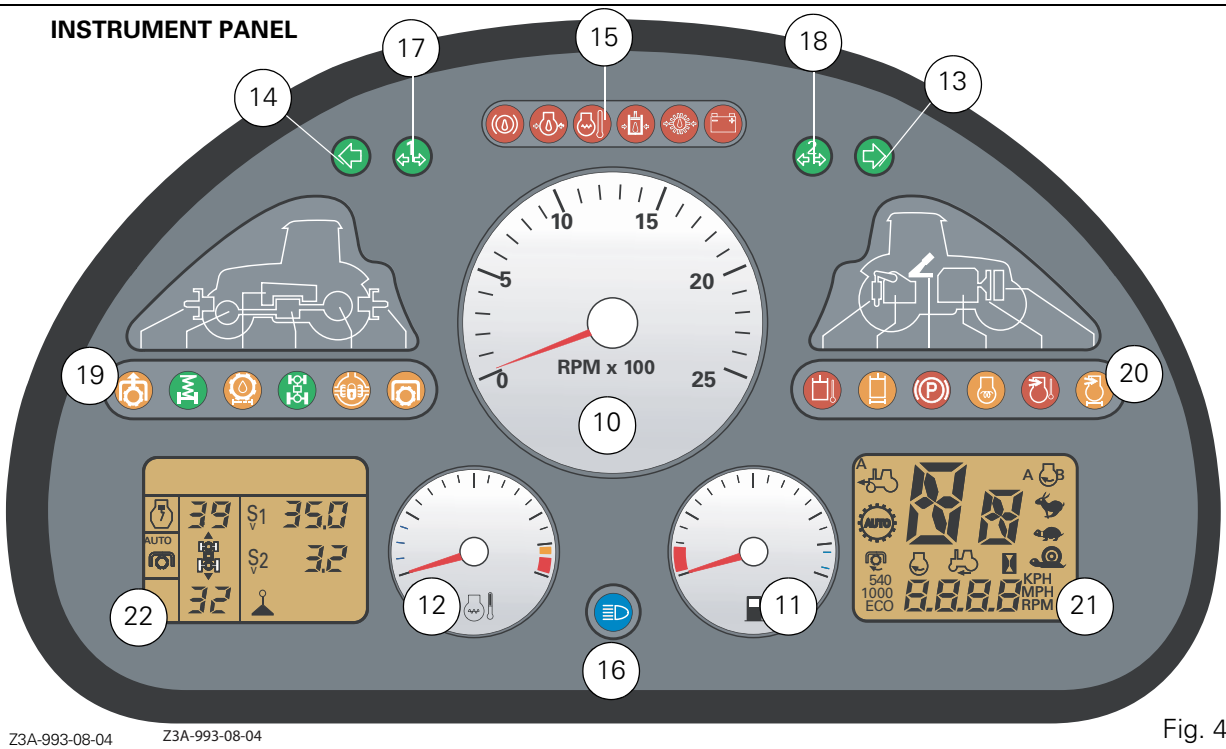

Fig. 4

Instrument panel (Fig. 4)

10. Tachometer.
    The tachometer shows the engine rpm in hundreds of revolutions per minute.
11. Fuel gauge.
12. Engine coolant temperature gauge.
    Stop the engine if the needle moves into the red zone.
13. Right-hand direction indicator light (green).
14. Left-hand direction indicator light (green).
15. Failure warning lights unit.
    See detail (Fig. 7).
16. Main beam indicator light (blue).
17. Direction indicator light for the first trailer (green).
18. Direction indicator light for the second trailer (green).
19. Control indicator lights for functions in use (see details in Fig. 5).
20. Incident and parking brake indicator lights (see details in Fig. 6).
    If one of the indicator lights remains lit after the engine has started or during normal use, stop the engine and investigate the cause of the problem.
21. Digital display.
    Displays the speed engaged (forward / reverse), A/B memory (electronic injection engine), Hare / Tortoise range.
22. DOT MATRIX screen (see details in Fig. 10)

3.2 - INDICATOR LIGHT PANEL

3.2.1 - Control indicator lights for functions in use (Fig. 5)

Green and orange control indicator lights display and monitor the functions of the tractor.

1. Front power take-off (orange).
2. Front axle suspension indicator light (if option fitted) (green).
3. High pressure transmission oil filter clogging indicator light (yellow).
4. Four-wheel drive indicator light (green).
5. Differential lock indicator light (orange).
6. Power take-off engaged (orange).

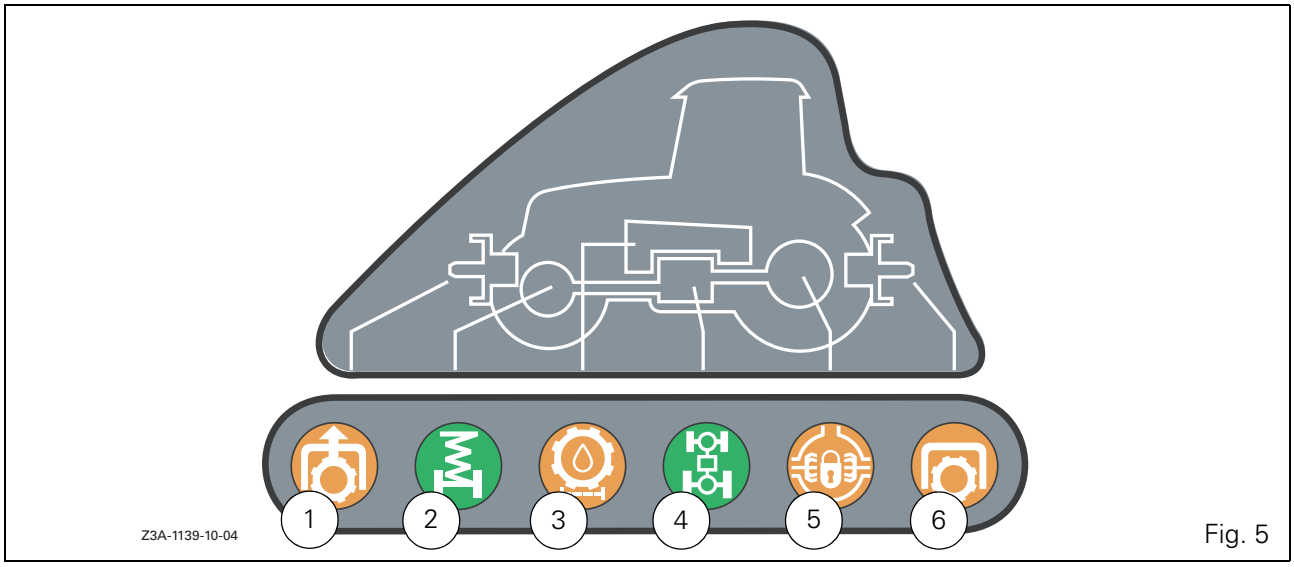

Fig. 5

3.2.2 - Incident and handbrake control indicator lights (Fig. 6)

Red control indicator lights signal problems of varying importance. They light up when the ignition key is turned in the start switch and usually go out once the engine is running.

If they light up when the engine is running normally, stop the engine at once and investigate the cause of the problem.

7. Auxiliary hydraulic oil temperature indicator light (red).
8. 15 micron auxiliary hydraulic oil filter clogging indicator light (orange).

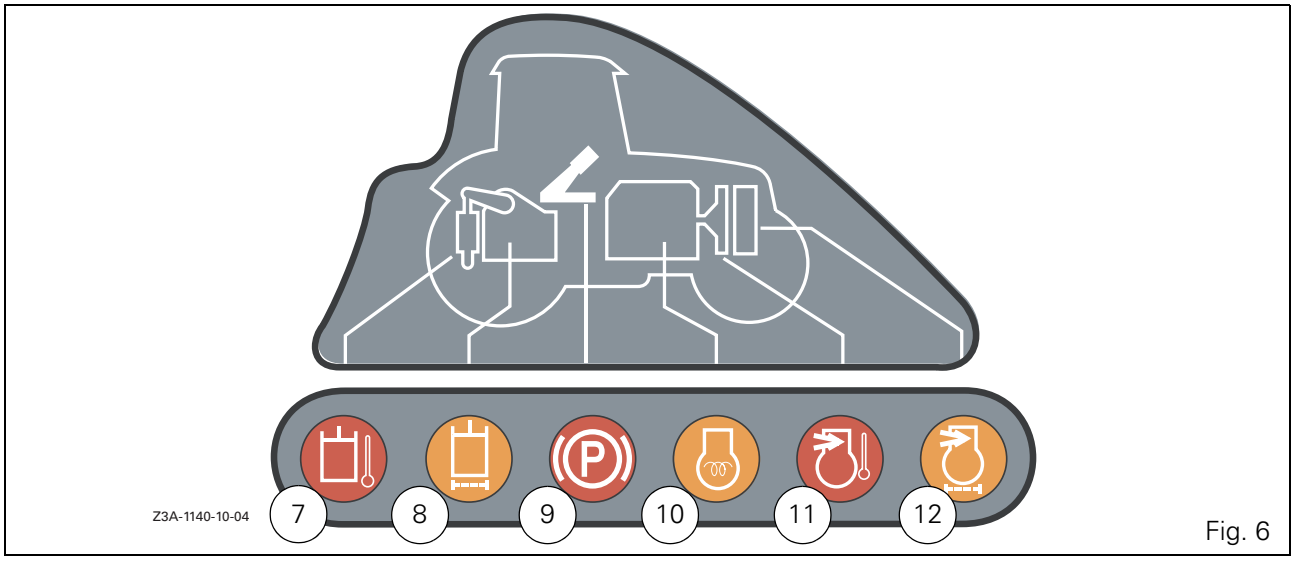

Fig. 6

9. Handbrake indicator light (red).
10. Grid heater indicator light (red).
11. Intake air temperature indicator light (red).
    This indicator light lights up when the ignition key is turned to the "auxiliary" position. It switches off when the engine starts running. If the indicator light lights up when the engine is running, stop the engine and investigate the cause of the problem immediately.
12. Air filter clogging indicator light (orange).

Failure control warning lights

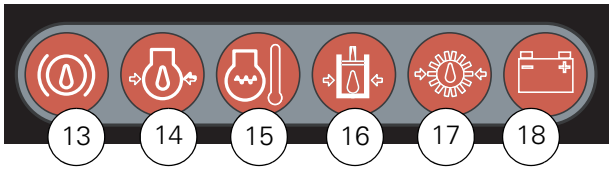

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Fig. 7

13. "Parklock" brake pressure indicator light (red).
14. Engine oil pressure warning light (red).
    This indicator light is switched on when the ignition key is in "auxiliary" position. It switches off when the engine starts running. If the indicator light comes on when the engine is running, stop the engine at once and investigate the cause of the problem.
    Check for low oil level or consult your dealer.
15. Coolant temperature indicator light (red).
16. Not used.
17. Transmission oil pressure warning light (red).
    If this indicator light comes on during operation, consult your Distributor or Dealer.
18. Alternator charge warning light (red).

3.3 - CONTROL DISPLAY

Fig. 8 - This control screen monitors the display of the various parameters:

1. Forward / neutral / reverse liquid crystal display.
2. Reverse shuttle sensitivity indicator.
3. Display of selected symbols: Rear power take-off/ engine rpm/ground speed:
   All these parameters may displayed in the lower part of the screen and selected by pressing the key 5 (Fig. 9) located on the instrument panel.
4. Digital display: Rear power take-off speed, engine rpm, ground speed, working time.

NOTE: To reset hours worked, select the relevant parameter and hold the switch 5 (Fig. 8) down for approximately 5 seconds to reset the display.

5. Power take-off automation.
6. front axle automatic functions indicator.
7. A/B speed memory status (engine with electronic fuel injection).
8. Hare / Tortoise range engagement indicator lights.

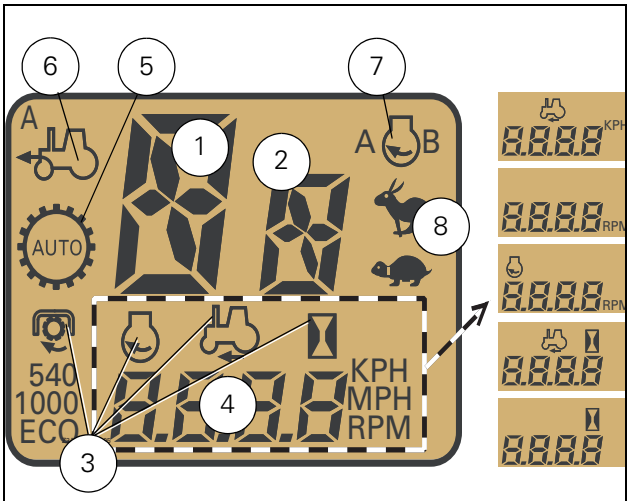

Fig. 8

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Fig. 9

3.4 - DOT MATRIX SCREEN

Fig. 10 - This control screen monitors the display of the various parameters:

1. Programmed engine rpm A.
2. Programmed engine rpm B.
3. Programmed engine rpm indicator.
4. Engine underspeed supervisor.
5. Forward shuttle speed value display.
6. Reverse shuttle speed value display.
7. Mode display (pedal, lever, etc.).
8. Selected mode speed display.
9. SV1 speed regulator display.
10. SV2 speed regulator display.
11. Control for access to DOT MATRIX menus.
12. Up scrolling key.
13. Down scrolling key.
14. Left-hand adjustment key.
15. Right-hand adjustment key.
16. Validation key.
17. Cancel key.

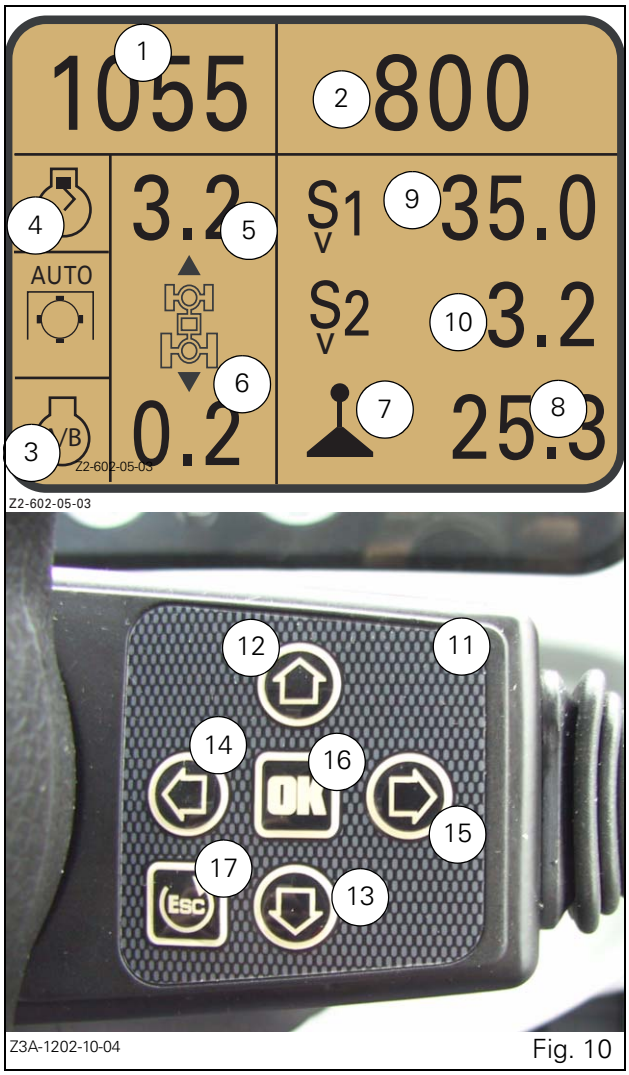

Fig. 10

3.5 - PEDALS

(Fig. 11)

1. Clutch pedal.
   This is fitted with a safety start switch. The clutch pedal must be depressed fully before operating the starter.

NOTE: Never keep your foot on the clutch pedal or keep it halfway engaged.

2. Brake pedals.
   The two brake pedals can be used either separately or locked together using latch 3.
3. Brake pedal locking latch.
4. Foot throttle.
   Use of the foot throttle enables a momentary increase of the engine rpm set by the hand throttle.

CAUTION: When travelling on the road, only the foot throttle should be used; the throttle lever should be moved to the idle position so that engine braking can be operational.

Check that memorized A/B ratio is not activated.

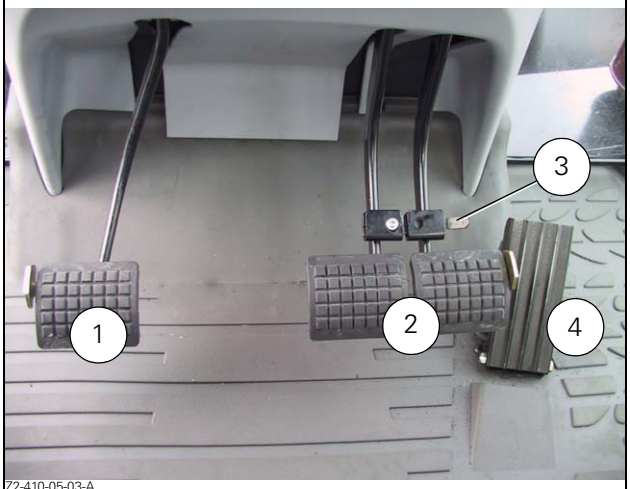

Fig. 11

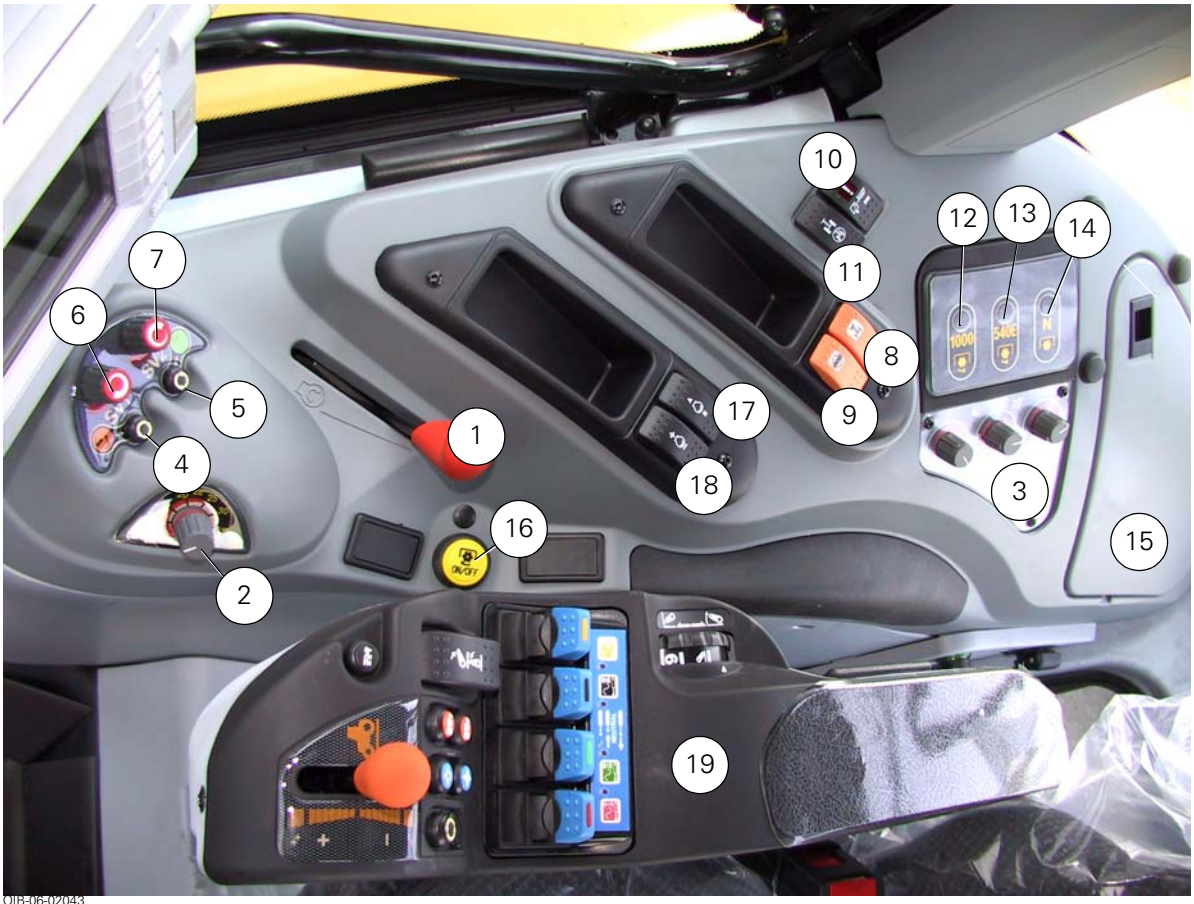

Fig. 12

3.6 - RIGHT-HAND CONSOLE

(Fig. 12)

1. Hand throttle.
2. Engine underspeed supervisor.
3. Electronic linkage instrument panel.
4. Lever or pedal mode control button.
5. Hare / Tortoise range button.
6. SV1 speed regulator control button.
7. SV2 speed regulator control button.
8. 4WD switch.
9. Differential lock switch.
10. Cab suspension switch
11. Front axle suspension switch (suspended front axle option).
12. 1000 rpm power take-off control button.
13. 540/540E rpm power take-off control button.
14. Power take-off at neutral control button.
15. Fusebox compartment.
16. 540/540E/1000 rpm rear power take-off ON/OFF control button.
17. A/B speed switch.
18. +/- engine rpm switch after selecting A/B speed.
19. Multi-function armrest.

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Fig. 13

20. 4-function control Joystick (separate or combined). (Fig. 13).
21. Height/depth control knob.
22. Lift/Lower selector switch with "neutral" position.
23. SV1 speed regulator control button.
24. SV2 speed regulator control button.
25. Transmission progressivity control.
26. HEADLAND mode control button (DATATRONIC 3 Headland option).
27. Quick soil engagement control switch.
28. 4 "SMS" hydraulic valve controls (FingerTip option) (Fig. 13). (see Chapter 4.14.8).
29. Hydraulic valve constant flow rate position switches (Kick out) (see Chapter 4.14.8).
30. Datatronic 3 on-board computer (Fig. 14).

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Fig. 14

31. Work lights / digital clock / temperature sensor control and indicator lights.

Work lights: Press the key(s) 1 to 6 (Fig. 15) to operate the desired function(s). The corresponding indicator light will light up:

1. Front work lights.
2. Work lights on steps and handrails.
3. Work lights on fenders.
4. Work lights on front of roof.
5. Flashing beacon.
6. Work lights at rear of roof.
7. Digital clock and temperature sensor:

   Press button A to select and change the time or temperature display.

   Setting the time: Press keys B or C to select the information (hr or min.) to be changed.

   Temperature control: Press the key A to select the outside temperature display. To change from °Celsius to °Fahrenheit, keep key A pressed down for approximately 5 seconds.

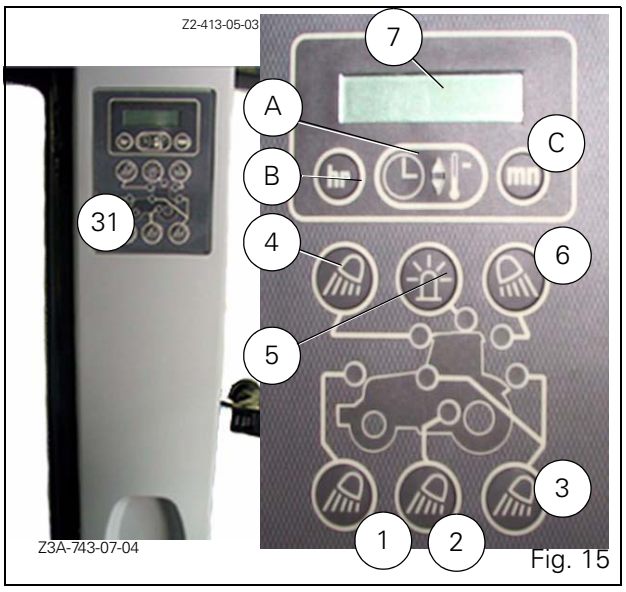


Fig. 15

32. Electrical connection for control screens, control units and other accessories (Fig. 16).

Maximum available power:

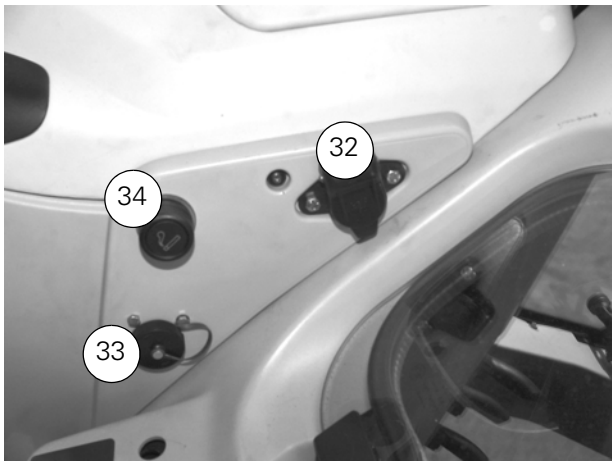
15/30 "+" permanent (25 A mp).

82 "+" only live with ignition key ON (5 A).

31 "-" negative.

33. Diagnostics connector.

34. Cigarette lighter.



Z2-415-05-03

Fig. 16

3.7 - LEFT-HAND CONSOLE

(Fig. 17, Fig. 18)

35. Cigarette lighter type socket.
36. Electrical control for external rear view mirrors (optional).
37. Rear window wiper.
38. Rear view mirror defrosting control (optional).

Fig. 17

39. Emergency handbrake.
40. Passenger seat (optional).
41. Storage tray.
42. Cup/can holder.

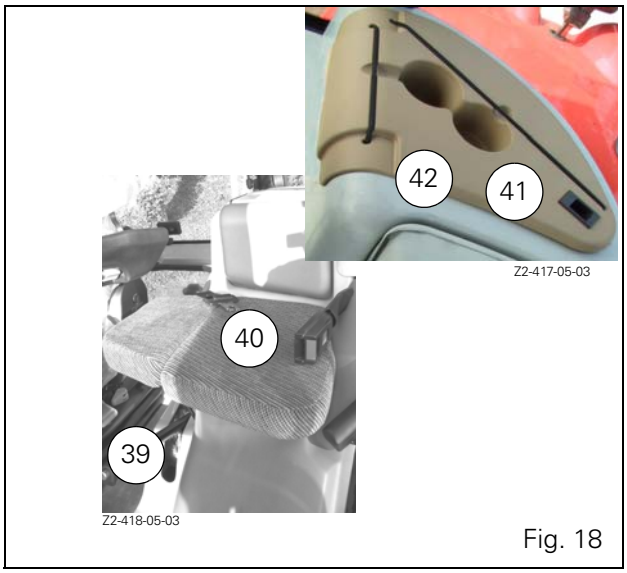


Fig. 18

3.8 - SEAT

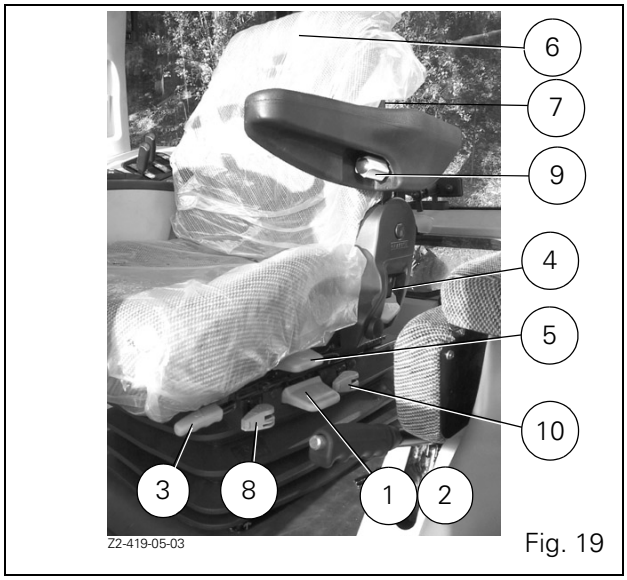


Fig. 19

Description (Fig. 19).

1. Weight adjustment:
   Automatic pneumatic seat
   With the driver sitting on the seat, briefly pulling the weight and seat height automatic adjustment lever (1) to adjust to the driver's weight.
   Manual adjustment seat
   The seat should be adjusted when the driver is not seated. To adjust, turn the lever (or adjustment thumb wheel) provided for this purpose. The indicator displays the weight which has been set.

NOTE: It is advisable to check the driver's weight setting and adjust it as necessary before starting the engine.

2. Height adjustment:
   Automatic pneumatic seat
   The seat height can be set automatically and is infinitely adjustable.
   The seat height can be altered by either pulling out or pushing in the automatic weight and height lever (2). If the adjustment reaches the top or bottom endstop, the height is adjusted automatically in order to guarantee a minimum spring travel.

NOTE: To avoid any damage, do not operate the compressor for more than one minute.

   Manual adjustment seat
   The seat height can be set automatically and is adjustable in several steps. The seat can be raised as required until it clicks into position. If the seat is raised higher than the last notch (end of travel), it returns to its lowest position.
3. Fore / aft adjustment:
   The locking lever must latch into the desired position. It should not be possible to move the driver seat into another position when it is locked.
4. Backrest adjustment.

5. Seat rotation adjustment:
   Pull the lever until you feel resistance which allows you to turn the seat 20° to the left and 10° to the right. Lockable every 10°.
   If you pull more strongly to overcome the resistance, the swivel will unlock to allow the seat to turn freely. Push the lever backwards to re-lock.
   There will be a click when the lever locks into place. The swivel should be in the central position for driving.
6. Backrest extension.
7. Lumbar support adjustment.

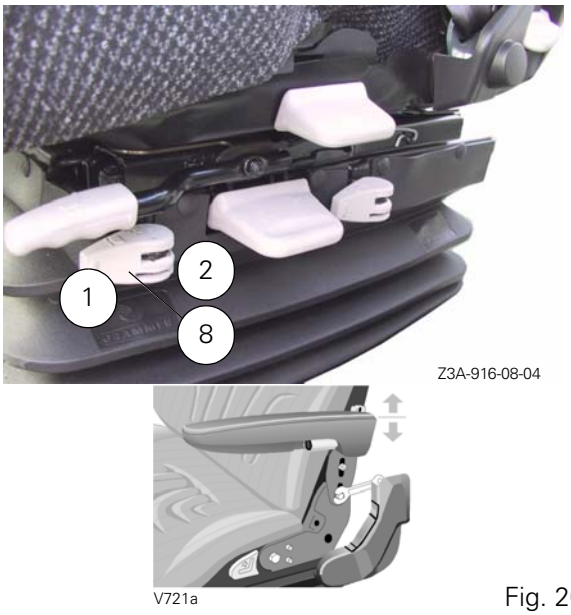


Fig. 20

8. Horizontal shock absorber (Fig. 20):
   Under certain conditions (e.g. Driving with a trailer), it is advisable to use the horizontal shock absorber. The operator's seat is better able to absorb the impacts in the direction of travel:
   - Position 1 = horizontal shock absorber on
   - Position 2 = horizontal shock absorber off.
9. Armrest angle adjustment:
   The armrests can be folded up if required and the height individually adjusted.
   To adjust the armrest height (arrows) the plastic cover must first be removed by pressing together the inner clips and pulling off the cover at the same time.
   Follow the process in reverse order to refit the cover.
10. Height/weight adjustment indicator.

Luxury pneumatic seat with automatic adjustment

11. Seat pan angle adjustment:
    The angle of the seat pan can be individually adjusted.
    Pull on the left-hand button (see diagram) while exerting or releasing pressure on the seat pan in order to find a comfortable position.
12. Seat depth adjustment:
    The depth of the seat pan can be individually adjusted.
    Pull on the right-hand knob (see diagram) and move the seat forwards or backwards to find the required position.
13. Lumbar support adjustment:
    Turn the handle to the left or right to move the lumbar support vertically or horizontally.
14. Seat heater:
    The seat heater is turned on by pressing the switch.

WARNING: Never adjust the seat when the tractor is in motion.

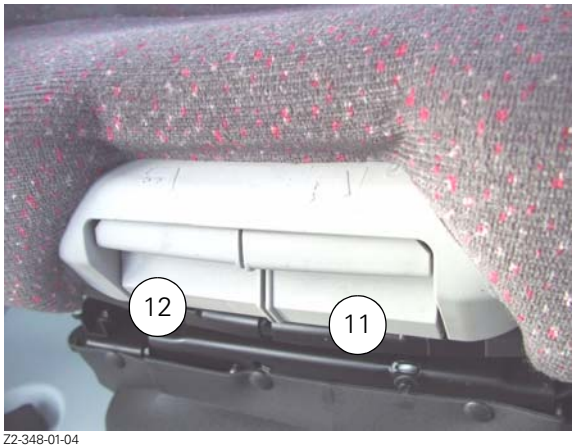


Fig. 21

Fig. 22

3.8.1 - Adjusting the multifunction armrest position

The length and height of the multifunction armrest located to the right-hand side of the seat can be adjusted after loosening the thumb wheels on its underside (ref. 1 Fig. 23).
Move the armrest to the required positions and firmly tighten the thumb wheels.

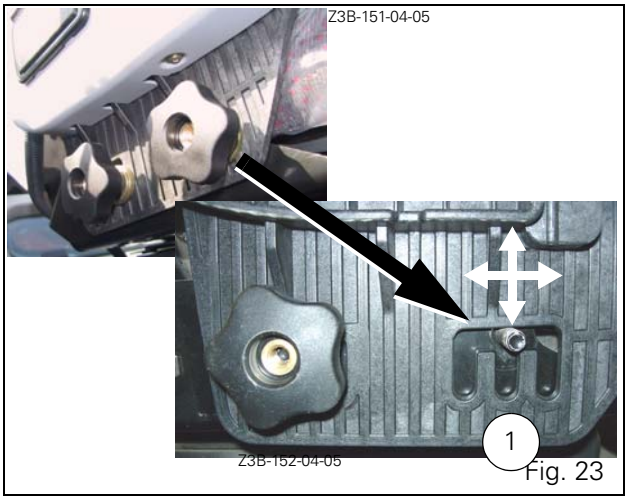


Fig. 23

3.9 - STEERING WHEEL

(Fig. 24)
The steering wheel tilt and height may be adjusted (except on platform versions). Both adjustments are made using a single lever.

1. Height adjustment
2. Angle adjustment

DANGER: Adjustments of the steering wheel must be done with the tractor stopped.

Fig. 24

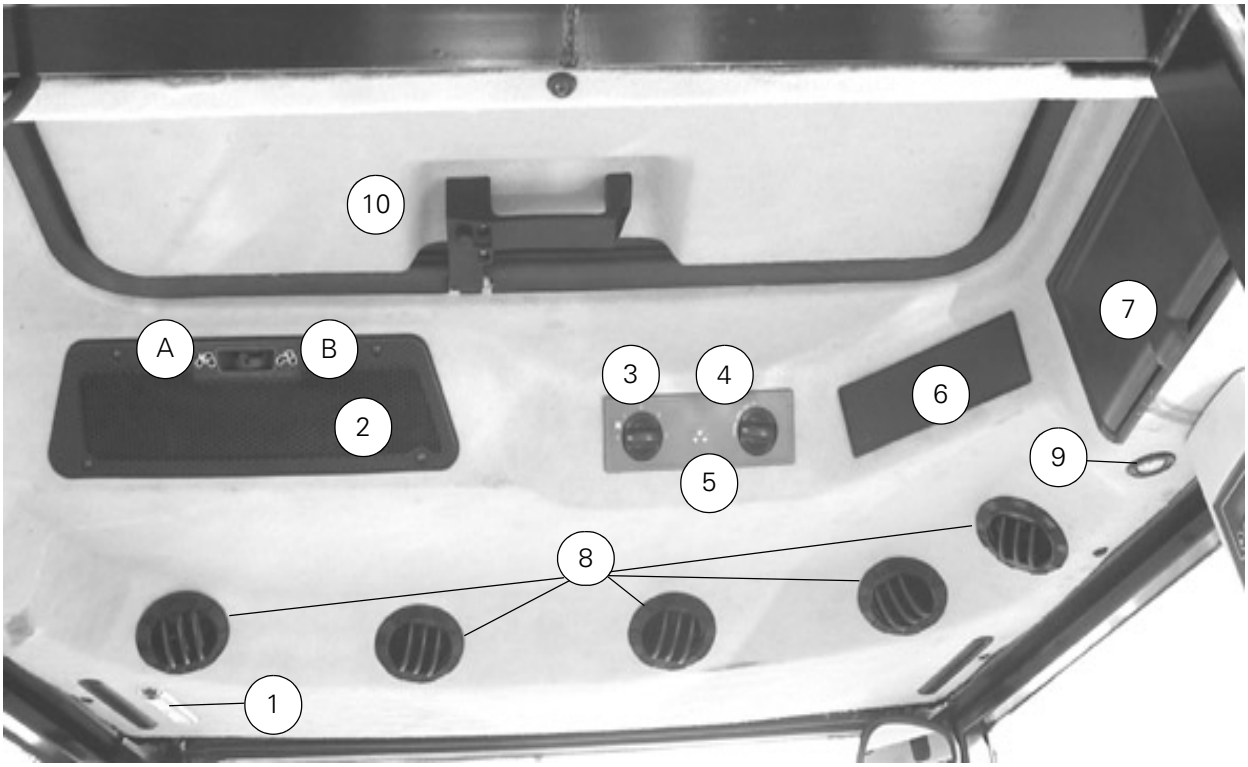


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Fig. 25

3.10 - UPPER CONSOLE

(Fig. 26)

1. Interior light (Fig. 26).
   By rotating the 3-position switch:
   0 - off position.
   1 - light comes on when opening the left hand door.
   2 - permanently on.
2. Adjustable ventilation grille.
   A: Outside air intake
   B: Air recycling
3. 4-speed ventilator/heater fan control (if fitted).
4. Heater controls:
   blue = cold
   red = warm
5. Manual or Automatic air-conditioning system control (option).
6. Radio slot.
7. Drink storage compartment, which is cooled when the tractor is equipped with air conditioning.
8. Adjustable air circulation vents.
9. Lighting of console.
10. Roof hatch (optional).

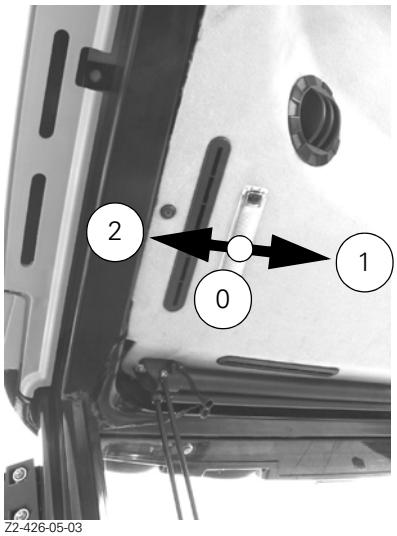

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Fig. 26

3.10.1 - Air-conditioning system

IMPORTANT: The cab doors and windows must be closed when the air conditioning system is in use. Do not use the air conditioning system when the temperature falls below 20°C. Switch off the system before starting up the engine. Ensure the cab air filter is clean (see chapter 5).

NOTE: If the air conditioning has not been used for some time, unlock the compressor before starting the engine, by rotating the pulley nut with a wrench.

IMPORTANT: To prevent seizure of the compressor and keep the cooling system in good condition, the air conditioning must be operated for a few minutes at least once a week, even in winter.

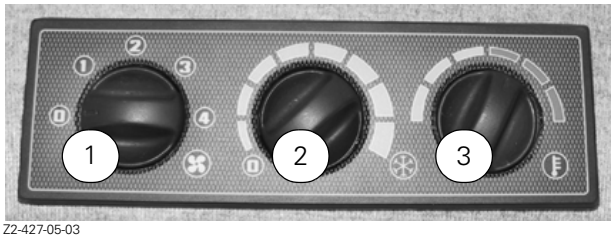
HAVE THE CIRCUIT CHECKED BY YOUR DEALER ONCE A YEAR .

WARNING: Do not attempt to disassemble any part of the air conditioning system.

3.10.2 - Manual air-conditioning system

3.10.2.1 - Description

1. Manual ventilation control knob
2. Thermostat (minimum/maximum) control knob
3. Heating (minimum/maximum) control knob



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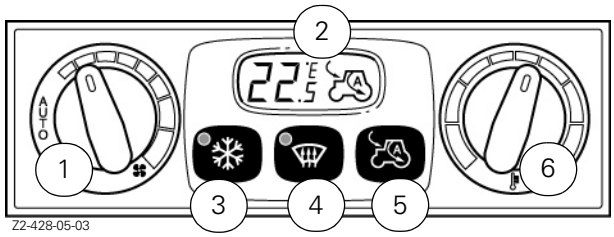
3.10.2.2 - Operation

1. When the engine is running, turn knob 3 to the left (cold) and move knob 2 to minimum position.
2. Position the fan knob 1 in fast position (fan symbol side).
3. When the required cab temperature is obtained, adjust the heating knob and rotate knob 2 if required to maintain a comfortable temperature.
4. Reduce the speed of fan 1 with the knob 3 to obtain a comfortable temperature.

Switching off the air-conditioning: Move the buttons for fan 1 and thermostat 2 to zero to switch off the air-conditioning.

NOTE: If a low fan speed and a low temperature are used for long periods, the evaporator may start to ice up. If icing occurs, adjust the thermostat control knob to raise the temperature and, if the icing continues, increase the fan speed.

3.10.3 - Automatic air-conditioning system (optional)



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3.10.3.1 - Description

1. Manual/automatic fan control knob
2. Digital display (LCD)
3. Compressor ON/OFF button
4. Defrosting button
5. Recycling button
6. Thermostat control knob

3.10.3.2 - General characteristics

The temperature inside the cab is controlled automatically by the air conditioning system that controls the temperature at the air vents, the fan speed, recycling and the compressor operation.

The required temperature can vary by 0.5°C (1°F) between 20-24°C (68-76°F) and by 1°C (2°F) outside this temperature range.

Celsius and Fahrenheit temperature scales:

°C - LO/18/19/20/20.5/21/21.5/22/22.5/23 23.5/24/25/26/27/28/HI

°F - LO/64/66/68/69/70/71/72/73/74/75/76/78/80/82/84/HI

The HI and LO displays and tractor icon indicate the recycling function status.

3.10.3.3 - Operation when the engine is stopped

When the tractor is started, all manual interventions carried out before stopping the vehicle are stored and are suggested at successive startings, except for the defrosting function.

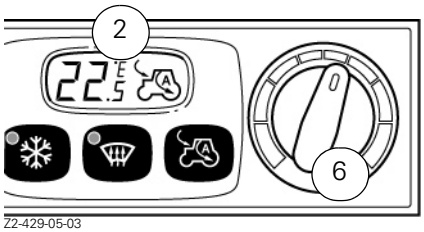
3.10.3.4 - Pre-selecting the cab temperature

Preselect the required temperature with knob 6. The preselected value is displayed on the LCD screen (2).

To change the display from Celsius to Fahrenheit:

- Switch off the tractor ignition.
- Move the fan switch 1 to OFF position
- Move temperature knob 6 to maximum heat position (red)
- Switch on the ignition and within 5 seconds press the defrosting button 4 and air recycling button 5 simultaneously.
- The temperature symbol (°C or °F) will appear on the LCD screen.

When there is a problem or error, an "E" is displayed to alert the user (contact your dealer to determine the cause of the problem).



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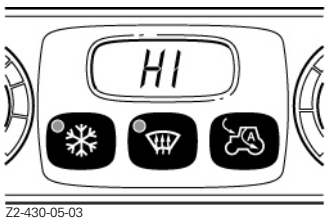
3.10.3.5 - Maximum temperature

To reach maximum temperature, adjust the cab temperature gauge to over 28°C.

Air conditioning is ON (A/C LED is lit)

- HI is displayed on the LCD screen.



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3.10.3.6 - Minimum temperature

To reach minimum temperature, adjust the cab temperature gauge to under 18°C.

Activating the compressor (A/C LED is lit)

- LO is displayed on the LCD screen.

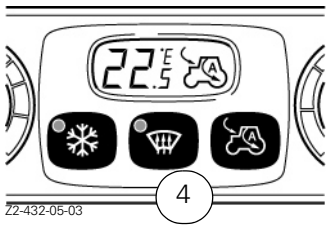
Z2-431-05-03

3.10.3.7 - Defrosting function

This function is activated by pressing button 4 (approximate time: 3 minutes).

The relevant indicator light lights up.

To switch off the defrost option and return to the previous condition, press the defrost switch again (LED 4 is switched off); otherwise it will switch off once the 3 minutes have passed.



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The compressor is activated (A/C LED is lit)

- HI is displayed on the LCD screen.

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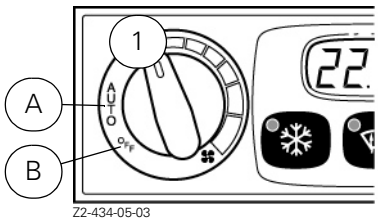
3.10.3.8 - Air flow adjustment

When fan control knob 1 is in auto position (A), air flow is selected automatically. Air flow change is gradual.

It is possible to manually select an air flow different to the air flow selected automatically. When the knob is moved to a different position, air flow change is instantaneous.

Depending on the level of solar radiation, the air flow adjusts automatically if the required temperature is lower than the outside temperature, and the LCD temperature display flashes.

Air flow can be adjusted to maintain the temperature inside the cab at preselected levels.



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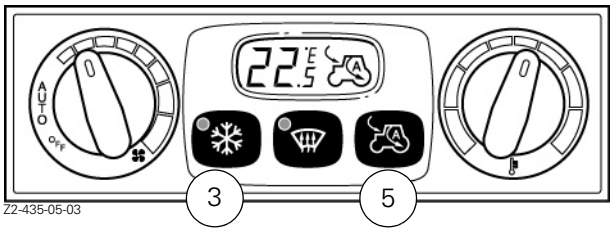
Stopping the automatic function

Move the fan button 1 to the OFF position (B).

3.10.3.9 - Air conditioning button

The tractor icon on the LCD screen indicates the recycling function selected using button 3; the corresponding indicator light comes on when the compressor is used.

When recycling is in ON position, the air conditioning unit is normally on; it can be switched off by pressing button 3.



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3.10.3.10 - Air recycling (ref. 5)

Recycling is in automatic mode and varies according to the external temperature.

If the Recycling button 5 is pressed once (ON position), an arrow is displayed inside the tractor icon on the LCD screen.

If the Recycling button 5 is pressed twice (OFF position) an arrow is displayed outside the tractor icon on the LCD screen.

If the Recycling button 5 is pressed a third time, automatic control is restored and the letter A (automatic) appears in the tractor icon.

Each time the unit is activated, if the external temperature is higher than a pre-determined level, before overriding the recirculation wait 2 minutes to change the air inside the cab.

NOTE: If external temperatures are high, it is advisable to work with the system in Recycling mode, with control knob 1 in automatic position.

3.11 - SUN VISOR

(Fig. 27)

To adjust the visor, pull down to desired position.

To raise the visor, pull the cord (1).

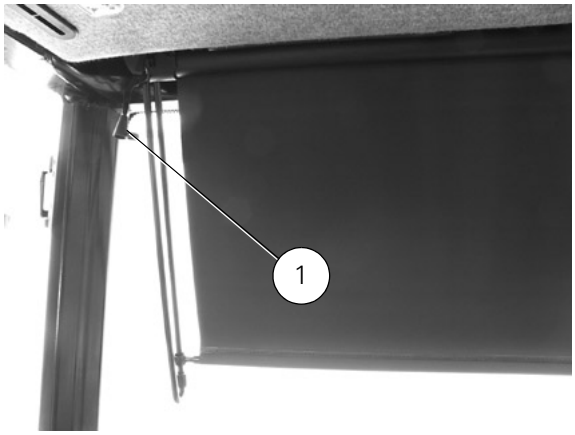

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Fig. 27

3.12 - ROOF HATCH

(Optional, Fig. 28)

This hatch is normally used to ventilate the cab.

The hatch is opened by pressing the button located on the handle and pushing the hatch upwards.

To open the hatch fully (emergency exit), push hard on the handle to force the gas cylinders from their holders. To close the hatch, pull it downwards to engage the ends of the gas cylinder rods in the supports, and continue pulling the hatch downwards until it clicks into locked position.

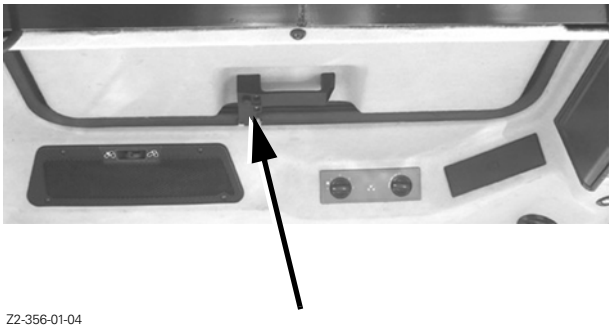

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Fig. 28

3.13 - BODY

The bonnet can be raised to allow free access to the engine.
To open it, press the button (A Fig. 29) and lift the bonnet.
To open it fully, push the locking lever (ref. B Fig. 31) located to the rear of the bonnet.
To remove the side panel of the body, pull it at the points indicated (C and D Fig. 31) and lift the panel to release it.

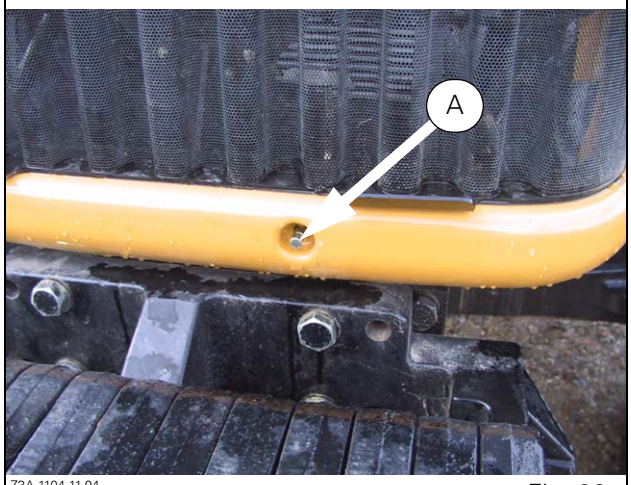

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Fig. 29

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Fig. 30

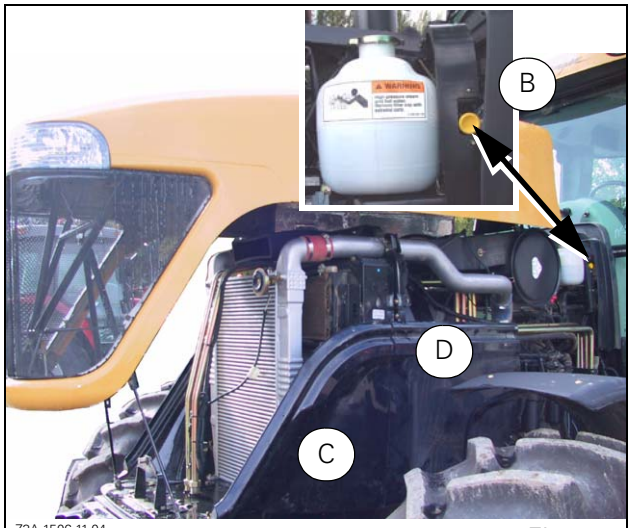

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Fig. 31

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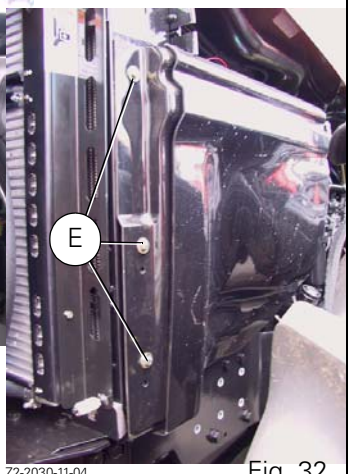

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Fig. 32

Chapter 4

OPERATION

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4.1 - RUNNING IN

4.1.1 - The following precautions should be taken during the running-in period

1. Experience has shown that the first 50 hours of tractor operation have a significant effect on the performance and life of the engine.
2. From the first operation, the tractor must run with the engine at almost full load. The engine should always be allowed to reach a temperature of 60°C (140°F) before being subjected to full load.
3. It is quite normal for oil consumption to be higher during the running-in period. Therefore, during running-in, the engine oil level must be checked twice a day during the first 50 hours of operation to avoid the risk of lubrication failure.
4. During running-in, check the tightness of all nuts, bolts and screws frequently. The wheel nuts must be retightened daily until their torque has stabilised (see Chapter 6).

4.2 - START-UP

IMPORTANT: Before starting the tractor, refer to the Service Guide, Section 5.

DANGER: Never run the engine in an enclosed space. Never run the engine unless you are sitting at the steering wheel of the tractor.

CAUTION: After a long standstill, to ensure lubrication of the turbo-charger bearings run the engine on the starter for about ten seconds.

4.2.1 - Starting the engine

Follow the start-up procedure for the Fig. 2.

DANGER: Check that the reverse shuttle lever is in neutral, the handbrake is on and the Park-Lock brake control on the steering wheel is engaged.

1. When the ignition is turned on, the TC and DC symbols flash on the right-hand screen on the instrument panel (Fig. 2).

NOTE: The numbers under TC and DC, required by the service engineer, correspond to the software version installed.

2. All the indicator lights on the instrument panel should light up. Consult your dealer if one of the indicator lights does not light up.

4.2.2 - Cold weather starting

A 1000 W heater and connection cable are fitted to help cold weather starting. The heater operates with 220 V and normally heats the engine coolant in two hours. In extreme cold, it may be required to operate all night.

WARNING: DO NOT plug in the heating element for testing unless immersed in coolant. It is dangerous to switch on a heating element in the open air, as the heat released can cause injury and the element can explode.

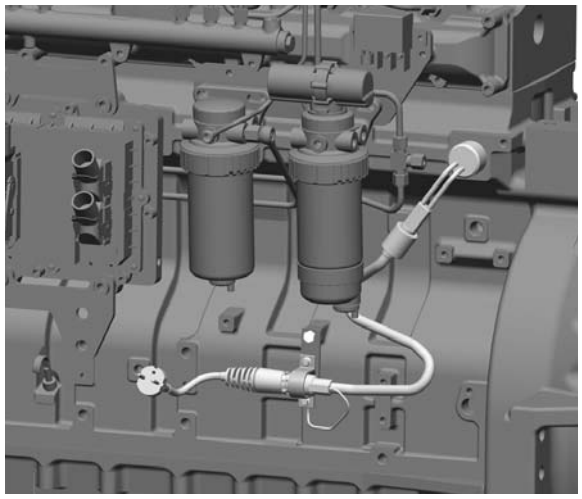

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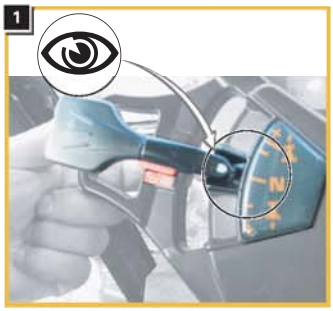
Fig. 1

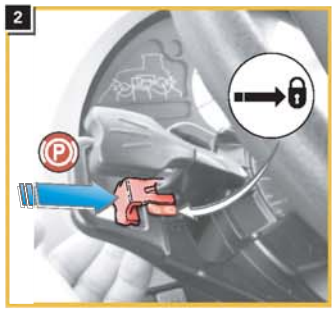
>BEFORE STARTING UP

> CHECK that the lever is in the NEUTRAL position

1



2



> CHECK that the ParkLock is engaged

>TO START THE ENGINE

> Declutch

3

> WAIT 2 seconds before releasing the clutch pedal

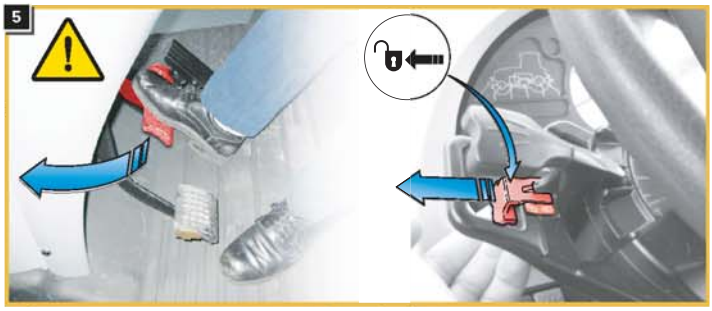
4

> Check the instrument panel display

>DRIVING

> PRESS and hold the brake pedals

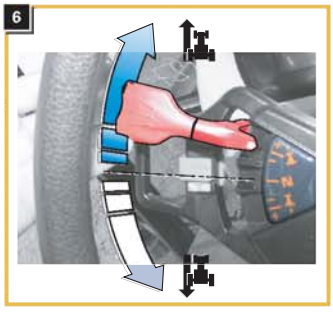
5



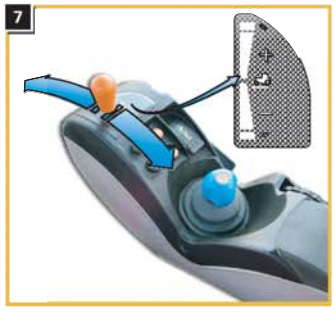
> Disengage the ParkLock

> Engage the reverse shuttle lever in the desired direction of travel

6



7



> Move the control towards + to increase or - to decrease the speed

Ref.4315392M1
Fig. 2

4.3 - STOPPING THE ENGINE

Reduce the engine rpm to idling for a few seconds, then turn the ignition key to the "Stop" position.

IMPORTANT: Do not stop the turbocharger engine suddenly when the engine is running at a high speed, because the turbine will continue turning on its own but will no longer be lubricated. Slow the engine before stopping it.

Move the PTO knob to neutral before starting the engine.

4.4 - DRIVING THE TRACTOR

4.4.1 - Foot throttle

Use of the foot throttle enables you to exceed the engine rpm set by the hand throttle. When the foot throttle pedal is released, the engine rpm returns to that set by the hand throttle.

CAUTION: When using the foot throttle, the hand throttle should be placed in the idle position.

Do not keep your foot on the clutch pedal or keep it halfway engaged.

Always descend slopes with the tractor in gear and the clutch engaged.

When turning on headlands with heavy, mounted implements, reduce engine rpm during the manoeuvre. Steering is not power assisted when the engine is not running.

4.4.2 - Reverse shuttle control

Control located to the left of the steering wheel (1. Fig. 3)
The Power Shuttle control is used to quickly change direction of travel (forward or reverse), and to change the speed.

OIB-06-02045

Fig. 3

Operation:

- Reverse shuttle: Move the reverse shuttle control in the required direction of travel; the corresponding icon will be displayed on right-hand screen on the instrument panel.
  When the tractor is travelling, change the direction using the control (1) without declutching.

NOTE: It is recommended to use the clutch pedal for all precise manoeuvring (attachment of implements, etc.).

4.4.3 - ParkLock electro-mechanical control (optional).

A Fig. 4: The operator may use a control located on the left of the steering wheel to engage or disengage the ParkLock electro-mechanical brake.

OIB-06-02046

Fig. 4

Activating "ParkLock":

- the Power Shuttle lever must be in neutral position,
- with control (A) pushed towards the steering wheel (closed padlock symbol).

"ParkLock" is engaged.

NOTE: The electronic control engages the ParkLock as soon as the ground speed drops below 1 kph. The indicator light lights up on the instrument panel and the symbol "P" appears on the digital display.

Deactivating "ParkLock":

- Control (A) must be pulled outwards (open padlock symbol).

IMPORTANT: For the "ParkLock" to disengage after engine start-up, the electronic control must record a switch of the control (A) from the closed padlock position to the open padlock position. If this condition is ignored, the ParkLock will remain engaged even if the control is in the padlock open position.

DANGER: Move the control to locked position (closed padlock symbol) before leaving the driver's seat if the engine is running.

4.4.4 - Choosing the correct gear ratio

Fig. 6. Select the ratio which gives the optimum fuel consumption without overloading the engine and the transmission. Also bear in mind that soil conditions can vary within a matter of a few yards in the same field. Select a ratio which allows the engine to operate comfortably at about 75% of its maximum power.

4.4.5 - Preselecting A/B engine rpm

Fig. 5 - This function gives the operator a continuous choice between two engine rpm settings, stabilised according to his chosen settings.

Memorising engine rpm settings

1. Select the required engine rpm using the foot or hand throttle:
   Keep the memory button (A or B (17)) pressed down for 1 to 2 seconds. The speed is memorised and activated. The operation is the same for both memories (A and B), and the speed remains memorised even if the ignition is switched off.
2. There should be no engine rpm selected:
   Keep the memory button (A or B) pressed down, do not release it; the speed will increase gradually. Release the button when the desired speed is reached; the speed will be memorised and activated.

Press button A / B to select or deselect the engine rpm predefined by button (18).

Each time button (18) is pressed, engine rpm is increased/decreased by 10 rpm. A continuously applied pressure rapidly increases or decreases the engine rpm to be memorized.

NOTE: When driving at a preselected, accelerated engine rpm, press once on the key A/B or on the brake pedals, or press the foot throttle rapidly (kick down) to drop automatically to idling speed.

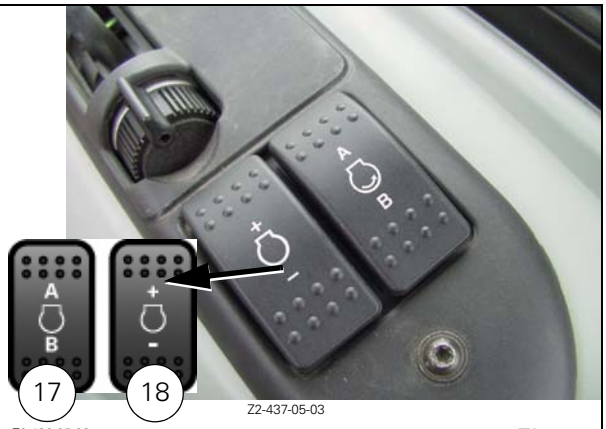


Fig. 5

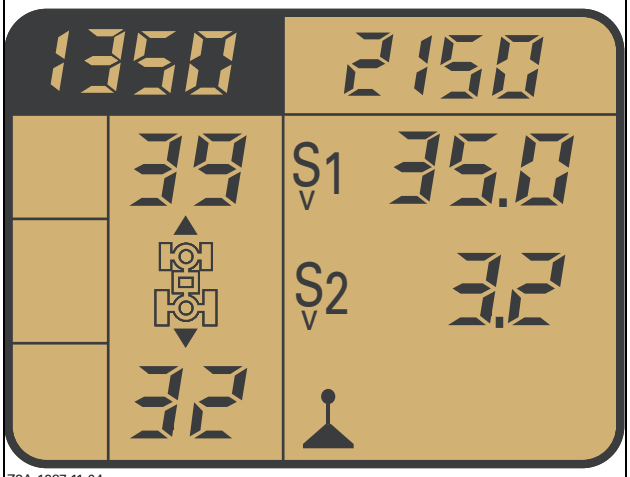


Fig. 6

- The engine symbol appears on the digital display, along with the letter A or B, indicating the active memorised engine rpm (example: memorised rpm A (2 Fig. 7).

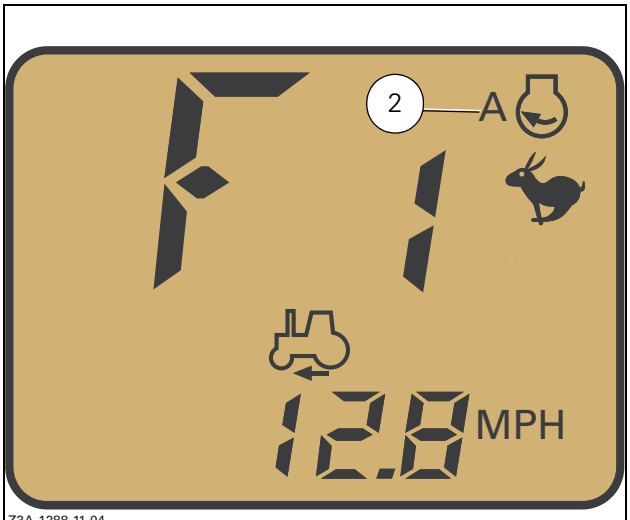


Fig. 7

4.4.5.1 - Changing the range

To shift from "Hare" range or from "Tortoise" range (button on console), engage the required range by keeping the gear shift switch (5) pressed until the ratio is fully engaged (the corresponding indicator light will light up on the instrument panel).

Fig. 8

NOTE: Do not rush when carrying out this manœuvre. The "Hare to Tortoise" synchronised range change is only possible when the tractor is stationary and the clutch pedal is pressed down. The "Tortoise to Hare" change is only possible at speeds above 5 kph.

DANGER: Before leaving the seat, you MUST move the reverse shuttle control (1. Fig. 9) to NEUTRAL and operate the brake control on the steering wheel ref. A (ParkLock).

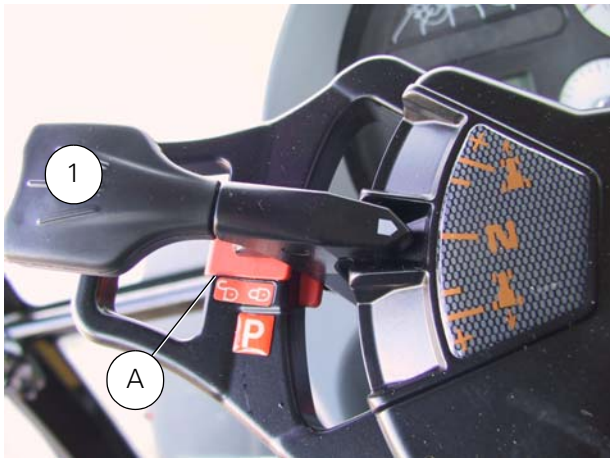


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Fig. 9

NOTE: If the tractor is working in conditions where water reaches the wheel hubs, some components may suffer corrosion damage.

Consult your dealer or agent with regard to sealing precautions. Failure to do so can invalidate the warranty.

4.5 - TECHSTAR CVT TRANSMISSION

4.5.1 - General

Models fitted with TECHstar CVT transmission have continuous variable transmission in the forward and reverse positions. Power is transmitted hydrostatically or mechanically, or hydrostatically and mechanically.

- Slow forward travel = Power transmission is hydrostatic primary/mechanical secondary.
- Fast forward travel = Power transmission is hydrostatic secondary/mechanical primary.

4.5.2 - Operation

There are no mechanical speeds like on a standard tractor.

4.5.2.1 - Selecting direction of travel

The TECHstar CVT transmission possesses a user interface and a specific display screen. The Power Shuttle lever (Fig. 10) controls direction of travel, and speed increase and decrease.

Ratio selection positions:

1. Neutral
2. Forward travel deceleration
3. Forward travel acceleration
4. Reverse travel deceleration
5. Reverse travel acceleration

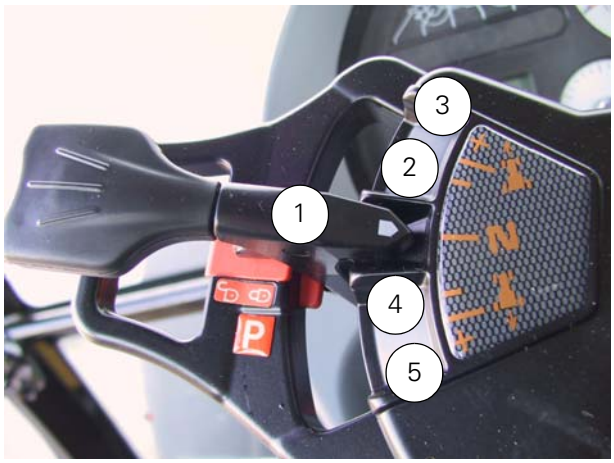

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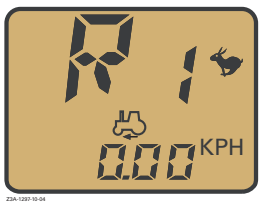
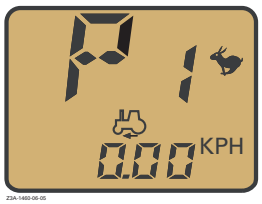
Fig. 10

As soon as the reverse shuttle lever is moved to the required direction of travel, the corresponding symbol appears on the right-hand screen on the instrument panel, as shown in the following table.

Position	Corresponding screen
1. Neutral	
2. Forward	
3. Reverse	
4. ParkLock engaged	

When the tractor is running, the direction of travel is always changed using the reverse shuttle lever (Fig. 10).
To start the tractor moving (forward or reverse travel), the correct transmission ratio must be selected.

4.5.2.2 - Fast Shifting

When changing the direction of travel, the tractor decreases to a halt, then accelerates in the opposite direction. Shifting is inhibited but not blocked when the following functions are active:

- the underspeed supervisor
- the turbo clutch function

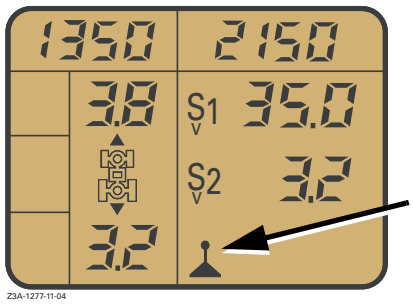
Fig. 11

During tractor movement, if the clutch pedal is activated, the transmission ratio is decreased until speed is zero.
The armrest lever (4 Fig. 11) also controls increases and decreases in speed depending on the direction of travel.

4.5.3 - Different control modes

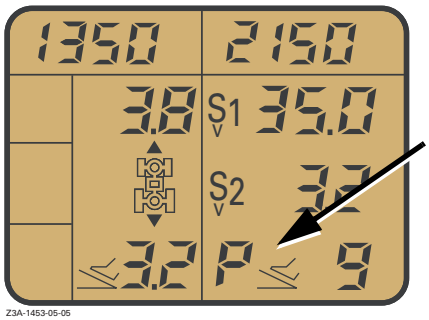
NOTE: At start-up, the tractor is in lever mode, transmission control is performed with the lever only.

4.5.3.1 - Lever mode



The speed depends on the position of the armrest lever (4 Fig. 11).

4.5.3.2 - Pedal mode



When the tractor is started, the throttle pedal must be released and button (5 Fig. 12) pressed.

Transmission is controlled exclusively by the pedal. To adjust the ground speed operate the SV2 potentiometer (6 Fig. 12) (max. 16 kph, min. 3 kph); the value is displayed to the right of the "pedal" icon on the DOT MATRIX screen. engine rpm is electronically adjusted depending on transmission speed. There are two possible settings in pedal mode:

- Power mode: (a P is displayed)

  This is the max. speed at the max. engine rpm (no programmed max. engine rpm).
- Eco mode: (an E is displayed)

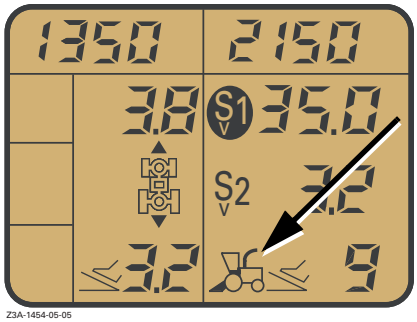
  In this case, maximum speed at 1800 rpm engine rpm (1800 is the maximum engine rpm in this mode).

NOTE: In pedal mode, each time button (5 Fig. 12) is pressed, the setting changes between power mode and economy mode. If the lever is pressed for 2 seconds when in pedal mode, the tractor exits pedal mode.

Z2-440-05-03

Fig. 12

4.5.3.3 - Self-propelled mode



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Access to self-propelled mode is possible only if engine rpm A or B is selected. In this mode, the user sets the engine rpm with memories A and B, and ground speed is controlled by the throttle pedal and hand throttle.

4.5.4 - Setting the ground speed

Both levers can be used to increase or decrease speed. The left-hand lever (Fig. 13), adjusts speed by increments of 0.1 to 2 kph, depending on how long pressure is applied to the lever.

OIB-06-02045

Fig. 13

The lever on the armrest (Fig. 14) adjusts the transmission ratio more easily due to its progressivity. When decreasing the ratio, the tractor stops at 0 kph (dynamic stop).


OIB-06-02044

Fig. 14

The right-hand lever stroke has variable increments depending on its position. There are three types of increment (Fig. 15) :

- Increments of 0.03 to 0.5 kph in slots 1 and 4.
- Increments of 1 kph slots 2 and 5.
- Increments of 2 kph in slots 3 and 6.

A mechanical stop is felt when shifting from slots 1 to 2 and 2 to 3 and from slots 4 to 5 and 5 to 6.

NOTE: If speed regulation is active, pressing the lever automatically deactivates it.

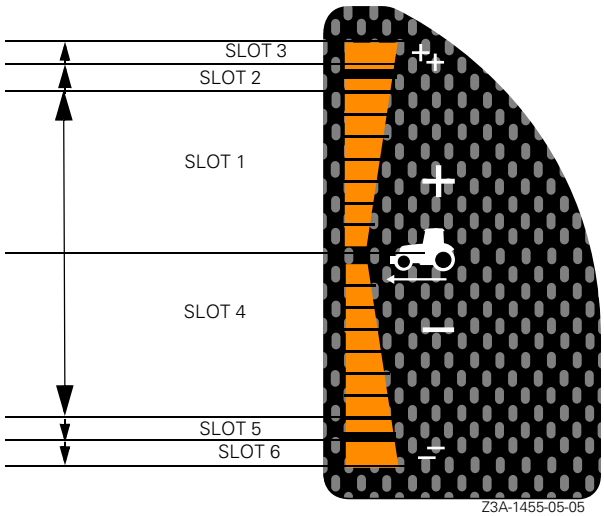


Fig. 15

4.5.5 - Selecting Hare or Tortoise range

The TECHstar CVT transmission has two speed ranges. Each range is limited, as shown by the following table:

	Speed range (in kph)	
	tortoise	hare
Forward	0.02 - 32	0.02 - 50*
Reverse	0.02 - 20	0.02 - 38

Button 1 on the right-hand console (Fig. 16) is used to shift from Hare to Tortoise range. Shifting is only possible from Tortoise to Hare range while the tractor is moving. When shifting from Hare to Tortoise, the reverse shuttle lever (Fig. 13) must be in neutral position, or the clutch pedal must be pressed down.

The range is displayed on the instrument panel right-hand screen.

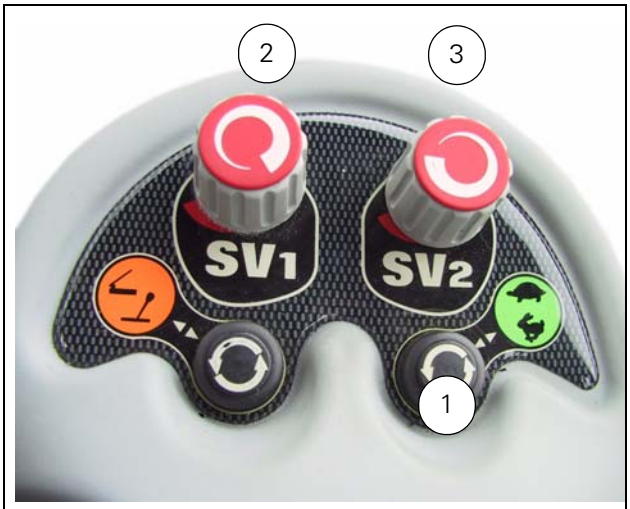


Fig. 16

4.5.6 - Speed regulators SV1 and SV2

The ground speed is held constant.

The speed regulator function allows the user to easily store and recall a ground speed.

Two separate memory buttons (SV1 and SV2) are available (Fig. 17). This allows two ground speeds to be memorised (e.g. working speed and transport speed).

The memorised speeds are displayed to the right of the DOT MATRIX screen (1 and 2 Fig. 18). When the speed regulator is used, the corresponding memory is highlighted on the screen. In Fig. 18, stored speed SV1 is activated.

4.5.6.1 - Presetting SV1 and SV2 speeds

The ground speed value can be adjusted using SV1 and SV2 potentiometers (2 and 3 Fig. 16). The adjusted values are automatically stored and remain in memory even after the tractor engine is stopped.

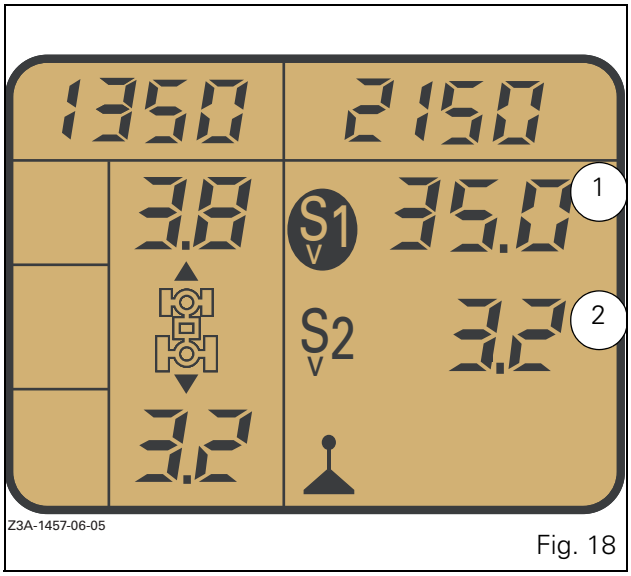
NOTE: It is also possible to change the stored speed when the tractor is driving with an activated "regulated" speed.

To shift between stored speeds, press once on the SV1 or SV2 button (Fig. 17). Press for more than 3 seconds on button SV1 or SV2 (Fig. 17) to store the actual tractor speed and replace the previous stored speed.

The speed regulator can only be activated if the following conditions are met:

- Clutch pedal not activated
- The tractor is running and has reached restart speed
- The engine rpm is higher than 1100 rpm

Fig. 17



Z3A-1457-06-05

Fig. 18

If these conditions are not met, the "speed regulator" function is deactivated and the current transmission ratio is maintained, with no subsequent control. Start-up with the "speed regulator" function is not possible. Stored speeds can be activated in both directions of travel.

The "speed regulator" mode is deactivated when:

- The drive lever is used
- The brake pedal or engine brake is activated
- Engine rpm drops below 1100 rpm
- The neutral switch is activated
- The range is changed (Hare or Tortoise).

CAUTION: Any use of the brakes automatically deactivates the speed regulator (SV1 or SV2) as well as the stored engine rpm (A or B).

4.5.7 - Engine underspeed supervisor

The underspeed supervisor is automatically activated when the engine rpm drops in case of stress. The tractor speed is then decreased automatically by the gearbox control to prevent the engine rpm from dropping further.

Supervisor operation

The underspeed supervisor is automatically activated when the engine rpm drops below 180 rpm under load. The supervisor value is set by a potentiometer located on the right-hand console (Fig. 19). Changes take effect immediately. It is therefore possible, during use, to set tractor operation to the corresponding values. When the engine underspeed supervisor is activated, an icon is displayed on the left-hand screen (Fig. 20).

Z2-452-05-03

Fig. 19

Potentiometer set to 10:

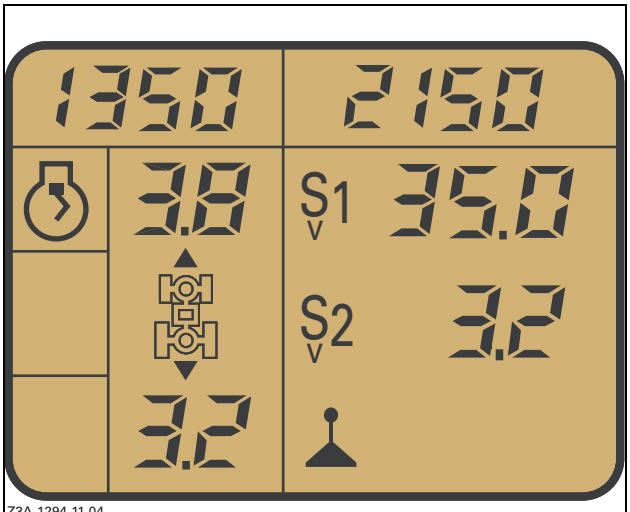
The ground speed decreases to maintain a constant engine rpm.

Potentiometer set to 40:

The engine rpm increases to maintain a constant ground speed.

Potentiometer set between 10 and 40:

Combination of the two previous explanations.



Z3A-1294-11-04

Fig. 20

4.5.8 - Clutch-coupler function

4.5.8.1 - Clutch function

Although the TECHstar CVT transmission has neither forward clutch nor coupler, the tractor has a clutch pedal.

This pedal allows to control the traction effort (as with standard clutch slip). When an obstacle appears suddenly, the tractor can be stopped rapidly, just like a conventional tractor, by pressing the clutch and brake pedals.

4.5.8.2 - Coupler function

Traction power is limited at low engine rpm by a pressure relief valve located on the transmission hydrostatic system.

Linked to engine rpm, the coupler function is achieved with a change in the pressure in the hydrostatic circuit. The coupler function therefore replaces the controlled action of a clutch pedal.

4.5.8.3 - Coupler function under traction

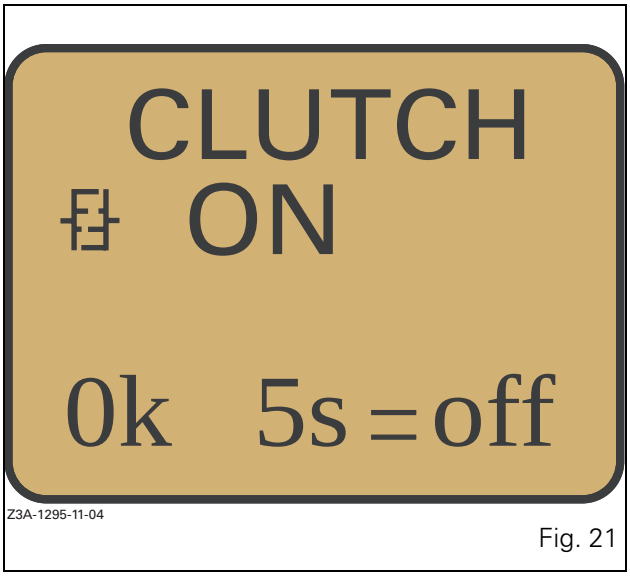
The coupler function is activated when the engine rpm drops below 1400 rpm, as the pressure in the hydrostatic system decreases in proportion to the drop in engine rpm.

Just like a coupler, the function limits engine overload and avoids stalling.

The coupler can be validated as required using the DOT MATRIX.

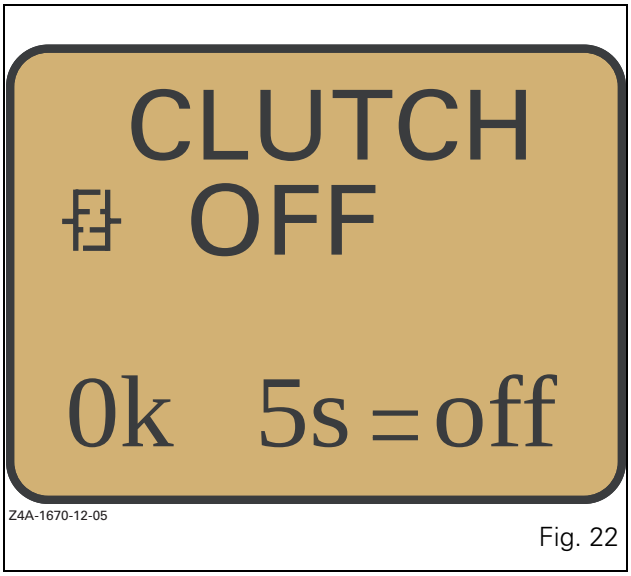
NOTE: To activate (Fig. 21) or deactivate (Fig. 22) the coupler function, move the Power Shuttle lever to neutral, fully press down the clutch pedal and press the OK button for 5 seconds.

WARNING: The coupler function is "ON" by default at start-up whatever is the status when the engine stops.



Z3A-1295-11-04

Fig. 21

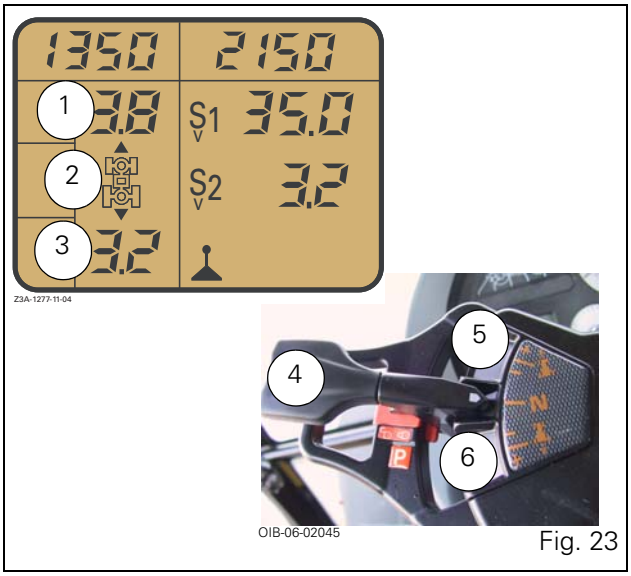


Z4A-1670-12-05

Fig. 22

4.5.9 - Setting restart speeds for reverse shuttle

To activate the preset values, press the clutch pedal, the tractor icon (2 Fig. 23) flashes. The required value can be set using the reverse shuttle lever.



Z3A-1277-11-04

OIB-06-02045

Fig. 23

To set the value when driving forwards (1 Fig. 23):

Depress the clutch pedal, put the Power Shuttle lever in position 5, then move the Power Shuttle lever to + or – to adjust to the required value.

To set the value when reversing (3 Fig. 23):

Depress the clutch pedal, put the Power Shuttle lever in position 6, then move the Power Shuttle lever to + or – to adjust to the required value.

Presettings are different in the Hare and Tortoise ranges. They are stored when the engine is turned off. The displayed value corresponds to the speed in kph obtained when the engine rpm is 1800 rpm. If the preset values are set to 0.2, reversal will occur at the same forward and reverse speeds.

NOTE: In all cases, the dynamic stop can be activated by moving the left-hand "forward to neutral" or "reverse to neutral" lever.

4.5.10 - Using the DOT MATRIX screen

The DOT MATRIX screen is initialised when the tractor is started (4 Fig. 25). To access the different menus, press the DOT MATRIX control buttons (ref. 5) and follow the instructions given in the table on the next page.

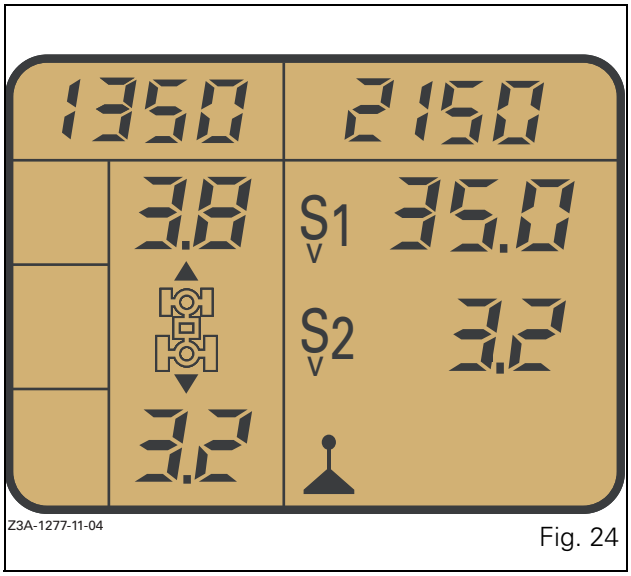


Fig. 24

Ref. 4: DOT MATRIX screen (Fig. 25)
Ref. 5: DOT MATRIX controls

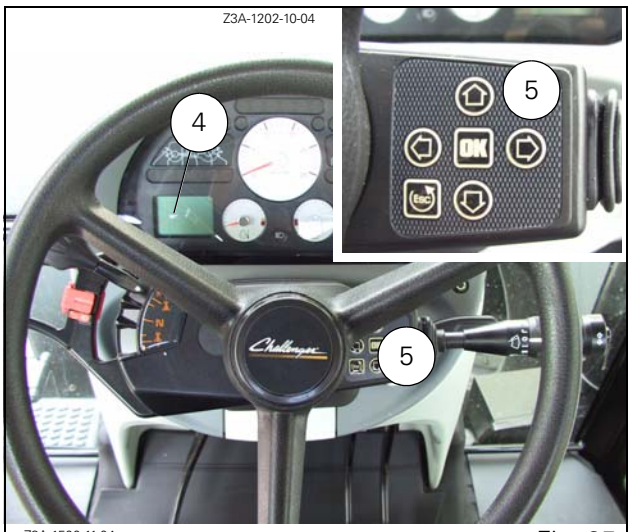
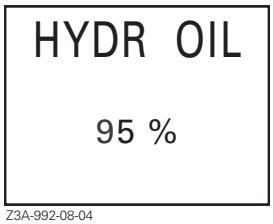
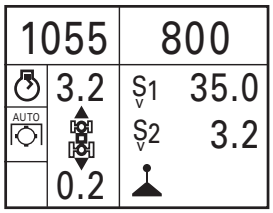
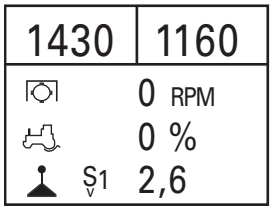
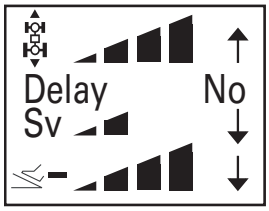
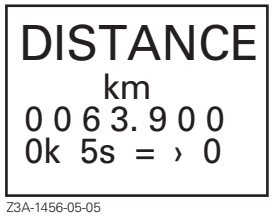
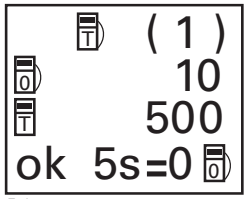
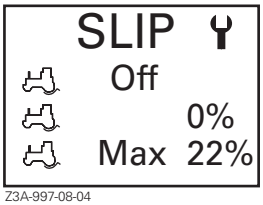
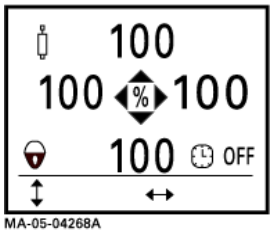
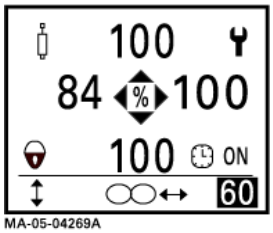
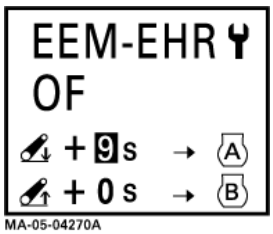
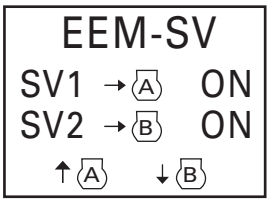
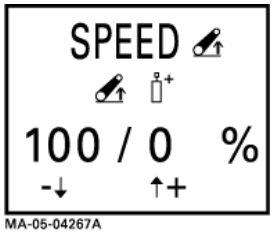
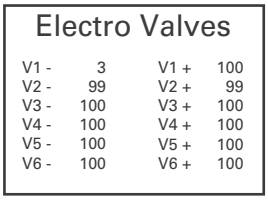
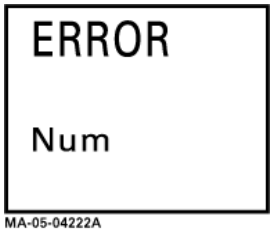
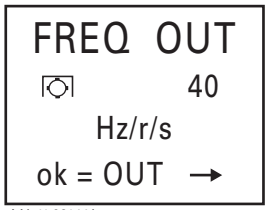
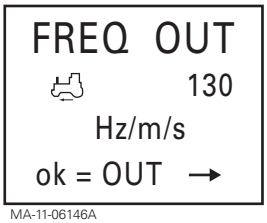
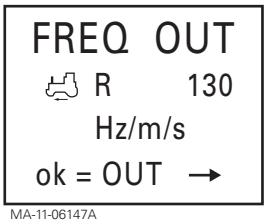
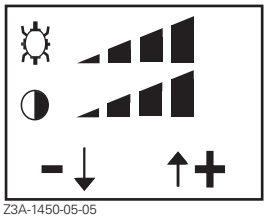


Fig. 25

Screens	Access	Function
 Z3A-992-08-04	Ignition before engine start-up (ignition key on +ACC position).	**Auxiliary oil level screen** Displays the filling level of the auxiliary oil tank (0-100%): - 100%: tank full. - 50%: warning threshold. When the auxiliary oil tank level drops to < 50%, it is automatically displayed every 4 minutes (press ESC to return to the main screen). If there is a sensor problem, ERROR is displayed instead of the filling level.
 Z3A-1306-11-04	Starting the tractor.	**Start-up screen** Displays the restart speeds, the SV1 and SV2 speeds, engine supervisor, PTO, pedal mode, eco mode or lever mode.
 Z3A-985-08-04	 To display from the start-up screen.	**Work screen** Displays memorised engine rpm settings, PTO speed, actual wheelslip rate,lever mode, pedal mode (power or eco), self-propelled mode and SV1 and SV2 speeds.
 Z3A-1307-11-04	 To display from the previous screen.  To increase or decrease reverse shuttle sensitivity (all modes). **OK** Delay: Allows a 1.5 second delay to be authorised or not when reversing the direction of travel.  Sv: Displays progressivity response time (select speed Sv1 or Sv2 and press the arrow).  Adjustment of pedal mode deceleration progressivity.	**Reversal sensitivity screen** Allows direction reversal response time to be set. The time starts once the Power Shuttle lever is activated If the response time is authorised, declutching takes place 1.5 seconds after the lever is activated. If it is not authorised, declutching takes place as soon as the lever is activated.
 Z3A-1456-05-05	 To display from the previous screen. **OK** To reset distance to zero.	**Distance screen** Displays the total distance run.

Screens	Access	Function
 Z3A-996-08-04	→ To display from the previous screen. OK Press 5 seconds to reset.	**Fuel used screen** Indicates fuel used: 0: Amount of fuel used since the last reset. T: total fuel used. This value is not interchangeable and cannot be reset to zero.
 Z3A-997-08-04	→ To display from the previous screen. OK Press to enter the settings menu. The symbol appears. ↑ ↓ To set the required wheelslip percentage value. ESC Used to exit the settings screen.	**Wheelslip screen (optional)** Used to adjust maximum allowable wheelslip and display current wheelslip.
 MA-05-04268A	→ To display from the previous screen. OK Press to enter the menus. → To select one of the displayed flow rate values or timing. ↑ ↓ To modify displayed flow rate values.	**Joystick setting menu (1/2) (if Datatronic 3 not installed)** This menu is used to adjust the flow rate values of each spool valve controlled by the Joystick. If the Joystick is locked (padlock displayed on screen) press the blue ON/OFF button near the power take-off control.
 MA-05-04269A	→ The type of timing can be displayed (value or infinite) by selecting timing. ↑ ↓ To adjust the timing value. ESC Used to exit the settings screen and validate the settings.	**Joystick setting menu (2/2) (if Datatronic 3 not installed)** This menu is used to activate or deactivate timing and can be set from 0 to 60 seconds or to infinite mode.
 MA-05-04270A	OK Used to activate the mode or validate the values. ↑ ↓ Used to shift from one line to another. → Used to set the seconds value of the displayed time.	**Headland 2 screen (if Datatronic 3 is not installed)** This menu is used to adjust the engine rpm when changing linkage status (work or transport). The conditions for operation are: - ON mode, - Power Shuttle lever out of neutral, - Ground speed selected, - When the linkage transport mode is selected, engine rpm B is activated after the preset time, - When the linkage working mode is selected, engine rpm A is activated after the preset time.
 Z3A-986-08-04	→ To display from the previous screen. ↑ ↓ To activate or deactivate one of the two functions.	**Headland 1 screen** This menu is used to vary the engine rpm during activation of SV1 and SV2 memorised ground speeds.

Screens	Access	Function
 Z3A-998-08-04	→ To display from the previous screen. OK Press 5 seconds to switch from On to OFF.	**Clutch coupler screen** Displays whether the clutch coupler function is on or off.
 MA-05-04267A	→ To display from the previous screen. ↑ ↓ To modify displayed linkage and spool valve flow rate values.	**Linkage and EHS valves menu** This menu is used to give priority to the auxiliary spool valves over the linkage, and vice versa. Max. linkage value: 100 Minimum spool valve value: 0 Minimum linkage value: 20 Maximum hydraulic valve value: 80
	→ To display from the previous screen.	**Valve display screen (optional if Datatronic 3 is not installed)** Used to display flow rate of each valve.
 MA-05-04222A	→ To display from the previous screen.	**Fault code screen** Displays all of the tractor error codes. Error codes are displayed in a loop for 4 seconds each.
 MA-11-06144A	→ To display from the previous screen. OK Used to change the reference speed (next screen). → To exit the FREQ OUT menu.	**PTO speed output adjustment screen (models fitted with electronic injection)** Used to adjust the PTO speed reference frequency (40 to 60), (consult your dealer for details on connection and value settings).
 MA-11-06145A	OK Used to change the reference speed (next screen). → To exit the FREQ OUT menu.	**engine rpm output adjustment screen (models fitted with electronic injection)** Used to adjust the engine rpm reference frequency (40 to 60), (consult your dealer for details on connection and value settings).

Screens	Access	Function
 MA-11-06146A	OK Used to modify the reference speed (next screen). To exit the Frequency menu.	**Ground speed output adjustment screen (models fitted with electronic injection)** Used to adjust the current speed reference frequency (36 to 144), (consult your dealer for details on connection and value settings).
 MA-11-06147A	OK Used to return to the PTO FREQ OUT screen. To exit the Frequency menu.	**Current speed output adjustment screen (models fitted with electronic injection)** Used to adjust the current speed reference frequency (36 to 144), (consult your dealer for details on connection and value settings).
 Z3A-1450-05-05	To display from the previous screen. To increase or decrease the value.	**Brightness/contrast screen** Used to adjust screen brightness and contrast.

IMPORTANT: When stopping the engine, all DOT MATRIX functions except the coupler function (CLUTCH) shift to OFF position.

4.6 - BRAKES

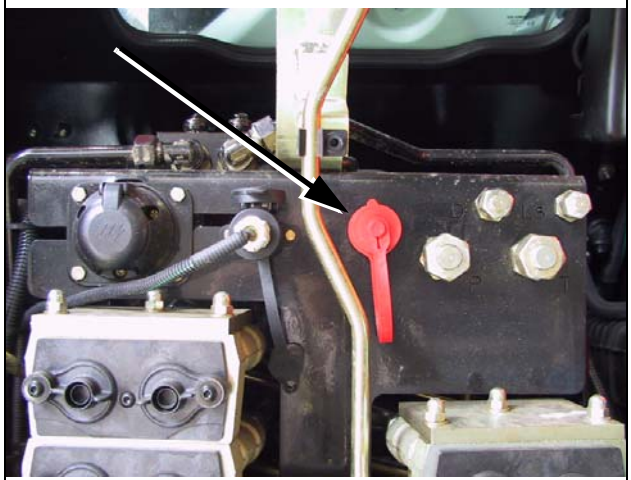
Z2-410-05-03-A

Fig. 26

DANGER: When driving on the road, the two brake pedals must be locked together (Fig. 26). Only the foot throttle should be used, and the hand throttle lever must be in neutral.

Check that memorized A/B ratio is not activated.

WARNING: Trailer brakes (Fig. 27). To activate the trailer brakes, connect the trailer hose to the union at the rear of the tractor and lock the brake pedals together.



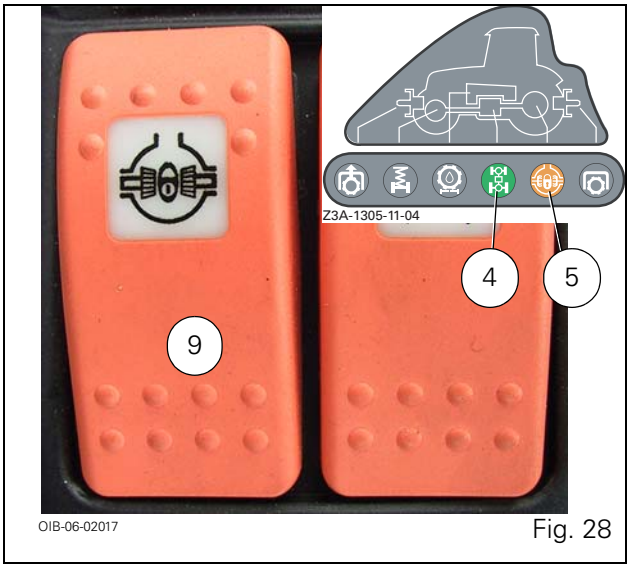
Z3A-751-07-04

Fig. 27

4.7 - DIFFERENTIAL LOCK

The differential lock is used to prevent the rear wheels from slipping in relation to one another and thus limits tractor wheelslip during field work.

CAUTION: During manoeuvres, turning is difficult with the differentials locked.



OIB-06-02017

Fig. 28

To engage the differential lock, press the switch (9Fig. 28). Differential lock engagement simultaneously engages the front axle, the differential lock (5) and front axle (4) instrument panel indicator lights come on.

To disengage the differential lock, press the switch again (1).

*IMPORTANT: **DO NOT** engage the differential lock if a wheel is already spinning.*

Disengaging the differential lock does not disengage the front axle.

- Automatic engagement and disengagement of the differential lock:

This function is continuous and is activated or deactivated as soon as the linkage control is operated (example: headland manoeuvres). As soon as the linkage switch is moved to Lift position, the differential lock disengages; when the linkage switch is moved to Down position, the differential lock automatically engages.

IMPORTANT: Use of the brakes cancels the differential lock. Press the switch (9 Fig. 28) again to re-engage it.

***DO NOT** engage the differential lock if a wheel is already spinning.*

NOTE: For optimum performance, engage the differential lock before any of the wheels begin to spin significantly.

4.8 - FOUR WHEEL DRIVE

When the front axle is engaged, the front wheels are driven. This function is strongly advised for field work to keep wheelslip to a minimum.

IMPORTANT: To avoid damaging the front axle, the front axle must be disengaged for road use.

There are two modes of 4WD operation:

1. Automatic mode:

At tractor start-up, the front axle is in automatic mode. To engage the front axle, press the switch (8 Fig. 29). The corresponding instrument panel indicator light comes on (4 Fig. 29) and the 4WD automatic mode symbol appears on the digital display (A Fig. 29).

When this mode is activated, the front axle disengages automatically at speeds above 14 kph and re-engages as soon as the speed drops below 10 kph.

2. Manual mode:

To activate manual mode, first engage the front axle by pressing the switch (8 Fig. 29), then press this same switch again for 3 seconds. The indicator light (4) comes on and the front axle symbol in automatic mode disappears from the digital display.

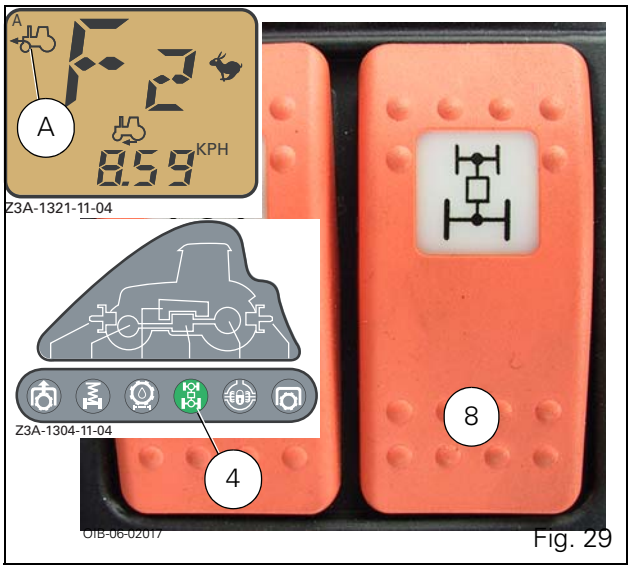


Fig. 29

NOTE: If the front axle is not engaged and the driver presses the dual brake pedals, the front axle automatically engages and the instrument panel light comes on.

When the brake pedals are released, the front axle is disengaged.

4.8.1 - Suspended front axle

The purpose of the optional suspended front axle is to increase operator comfort through improved shock absorbency when driving the tractor on the road, coupled with increased stability at higher speeds by better tyre contact with the ground.

The front axle suspension can be activated and deactivated by a switch ref. 1. located on the right-hand side of the console inside the cab Fig. 30.

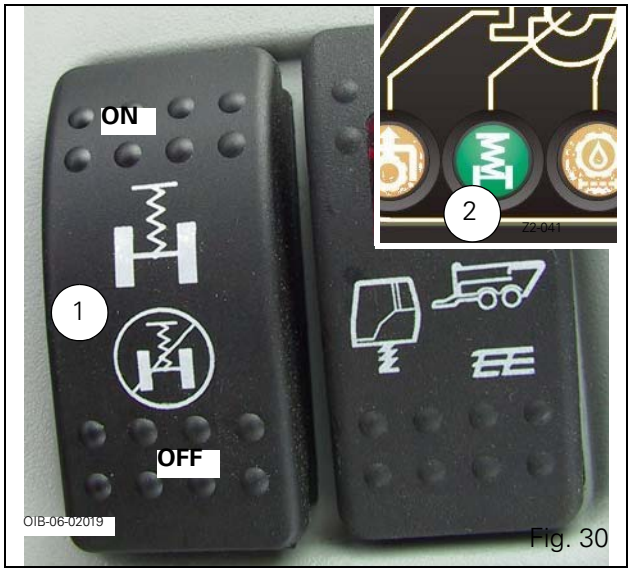


Fig. 30

Operation

On starting the engine, the suspension of the front axle remains in the status (high or low) that it was in when the engine was stopped, and a warning light corresponding to this status lights up. The suspension is activated by moving the switch to ON (in service). The indicator light 2 lights up on the instrument panel and the front axle is raised a few seconds later.

To deactivate the suspension, move the switch to OFF (not in use).

4.9 - SUSPENDED CAB

Cab suspension flexibility can be adjusted depending on different comfort requirements (road or field work).

Fig. 31

SettingFig. 31:

- Road position (harder, trailer symbol on the switch):
  - Move switch (A) to position (1) to harden the suspension.
- Field position (softer, plough symbol on the switch):
  - Move switch (A) to position (2) to soften the suspension.

NOTE: It is advisable to move back into field position at the end of the working day or before any extended immobilisation.

Servicing: See Chapter 5.

4.10 - STEERING

CAUTION: The steering is hydrostatic. When the engine stops, the booster pump no longer feeds the system. Hydrostatic steering therefore shifts automatically to manual operation mode, which requires greater effort when turning the steering wheel. This mechanism ensures safe operation in all conditions of use. However, no hydraulic system can operate efficiently unless:

-it is correctly maintained and approved fluids are used

-the tightness of all connections, and the oil level, are regularly checked.

4.11 - WHEELSLIP CONTROL

When the Datatronic 3 option is fitted, the wheelslip function is available on the tractor.

This function is used to check the depth of implements in the soil according to the tractor wheelslip rate, when the electronic system detects a difference between the tractor theoretical and actual ground speeds.

To activate and adjust this function, see section 4.5.10 Using the DOT MATRIX screen.

NOTE: This function can be activated by pressing the switch (1 Fig. 32), the wheelslip control icon turns to green (2 Fig. 33).

Fig. 32

Description (Fig. 33):

2 - Wheelslip control inactive (green icon if the function is active)

3 - Maximum allowed wheelslip (value adjustable using the DOT MATRIX)

4 - Actual tractor wheelslip

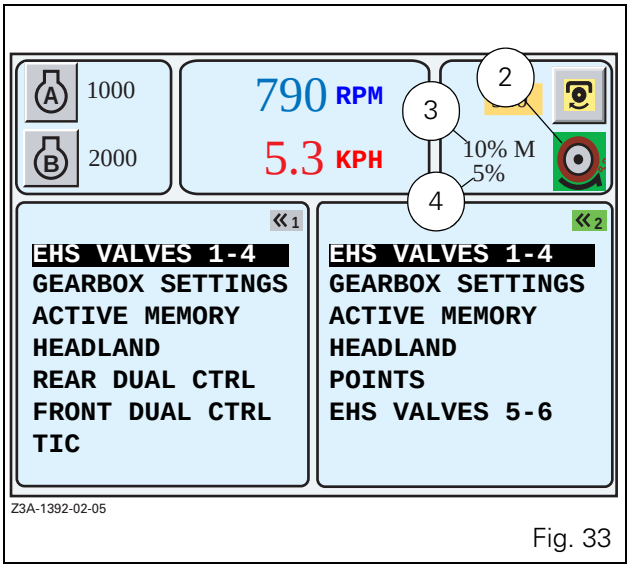


Fig. 33

4.12 - POWER TAKE-OFF

WARNING: Always disengage the PTO and stop the engine before attaching or detaching an implement or making adjustments to it.

Take all safety precautions in any operation involving implements driven by the power take-off.

DANGER: Power take-off

Never cross over the universal joint shaft.

Do not use the tractor or implement drawbars as a step.

Never use the universal joint shaft as a step.

Never wear loose-fitting clothes.

Remain at a safe distance from the universal joint shaft.

4.12.1 - Front power take-off

The front PTO is controlled by the switch (Fig. 34).

To engage the PTO, slide the red safety slider, as indicated by the arrow, while pressing the switch, as shown by ref. D, to unlock it; the indicator light ref. 1 lights up on the instrument panel.

Press the switch, as shown by ref. E to stop the PTO; in this position the switch prevents accidental engagement.

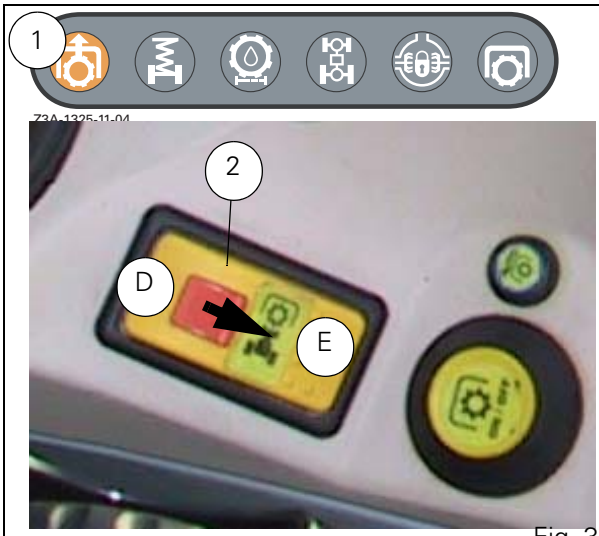


Fig. 34

4.12.2 - Rear power take-off (PTO)

The power take-off (PTO) is operated independently of the transmission. 540 rpm, 540E rpm and 1000 rpm speeds can be obtained by selecting the appropriate speed with the buttons Ref. 3 (Fig. 35). The relevant display appears on the digital display and the instrument panel indicator light Ref. 6 flashes.

Button "**N**" disengages the PTO if it is activated.

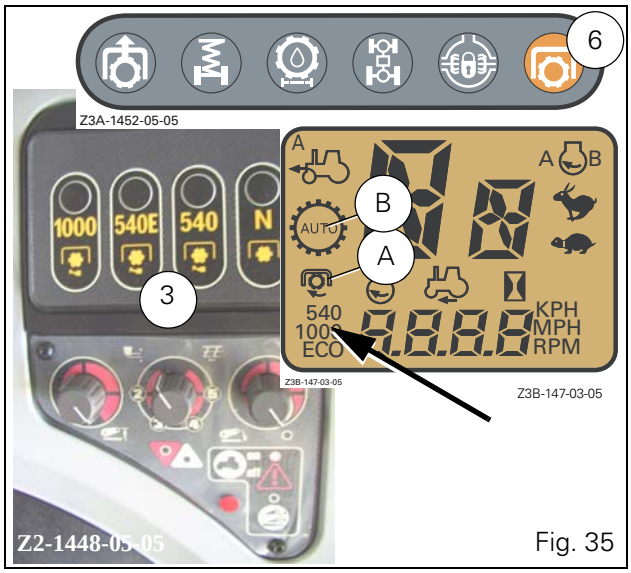


Fig. 35

PTO speed selected	Display	Maximum engine rpm
540 rpm	540	2090 rpm
540E rpm	ECO	1600 rpm
1000 rpm	1000	2030 rpm

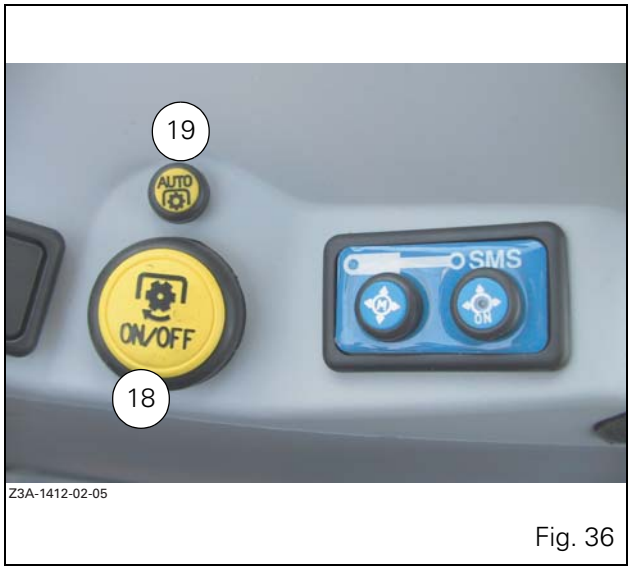


Fig. 36

• **Engaging PTO in manual mode:**

Press the ON/OFF control button (18 Fig. 36). The power take-off engaged indicator light (6 Fig. 35) stops flashing and remains lit permanently. An engaged symbol appears simultaneously on the digital display (A Fig. 35). The clutching process depends on the length of time the push button is pressed down.

Less than 5 seconds

Progressive start-up, the PTO clutch automatically adapts to the conditions required to start the implement.

More than 5 seconds

The speed controls and default values are deleted.

NOTE: If no speed has been preselected when the PTO is activated, it is deactivated after a short pause and a warning message appears on the screen.

To stop the power take-off, press the push-button (18 Fig. 36) again.

• **Engaging PTO in automatic mode:**

This function stops the power take-off temporarily and automatically when the linkage control is in Lift position (e.g.: headland manoeuvres).

Operation:

1. Selected a power take-off speed and then press the power take-off engaged control button (18 Fig. 36). The power take-off engaged indicator light (6 Fig. 35) remains permanently lit.
2. Move the linkage Lift/Lower selector to the Lower position.
3. Press the automatic mode engaged button (19 Fig. 36). The AUTO symbol appears on the digital display (B Fig. 35).

As soon as the linkage is in Lift position, the power take-off stops automatically and the indicator light (6 Fig. 35) flashes.

As soon as the linkage returns to the Lower position, the PTO is automatically activated and the indicator light (6) remains permanently lit.

NOTE: If the Lower control is not activated within 90 seconds or the ground speed increases to over 25 kph, the PTO is switched off permanently.

WARNING: Always move the power take-off button ref. 16 to OFF when it is no longer in use.

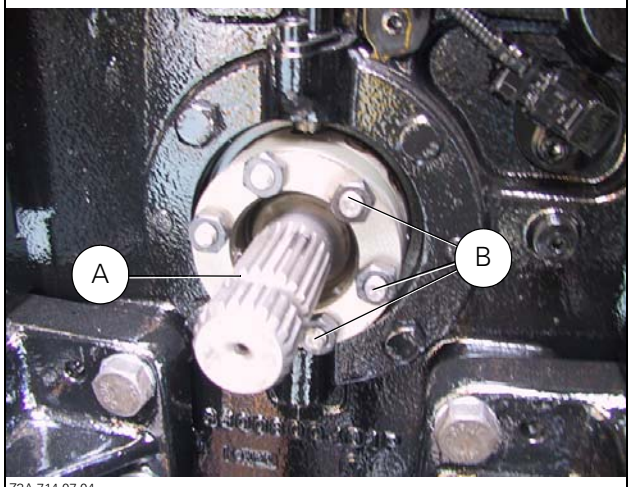
4.12.3 - External PTO stop button

Fig. 37**:** Located on the left-hand fender (G), this stops the rear power take-off shaft rotating; the indicator light flashes on the instrument panel.

To re-engage the power take-off, activate the button (18 Fig. 36) in the cab or the external control button (G) for at least 6 seconds.

OIB-06-020367 Fig. 37

4.12.4 - Interchangeable shaft (flanged shaft)



Z3A-714-07-04 Fig. 38

Flanged shafts that can be fitted:

Power take-off end-fitting with 21 x 1 3/8" splines
Power take-off end-fitting with 6 x 1 3/4" splines
Power take-off end-fitting with 20 x 1 3/4" splines

CAUTION: When changing the shaft (A), the Allen screws (B) must be tightened to a torque of 69 Nm.

Fig. 39

4.13 - ELECTRONIC LINKAGE

(Fig. 39)

A. Height / depth setting knob
B. Function selector: position/intermix/draft
C. Maximum lift height setting knob
D. Manual or automatic lowering speed setting knob
E. Lift / Lower selector switch with "neutral" position
F. Active transport control system knob
G. Linkage lowering indicator light
H. Linkage lifting indicator light
I. Console locking and malfunction self-diagnostic indicator light
J. Active transport control system indicator light
K. Lowering speed automatic control indicator light
L. Quick soil engagement
M. Active wheelslip control
N. Linkage console locking indicator light (Fig. 40)

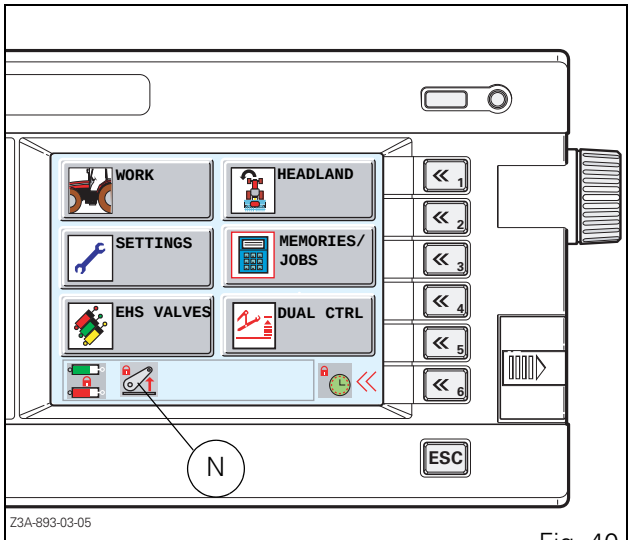
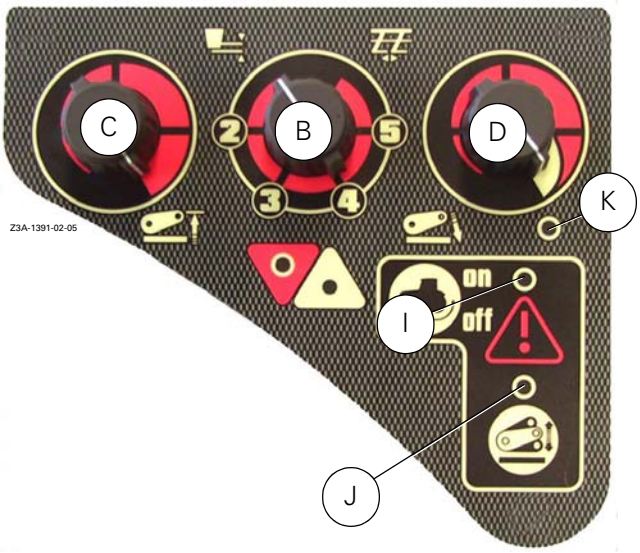


Fig. 40



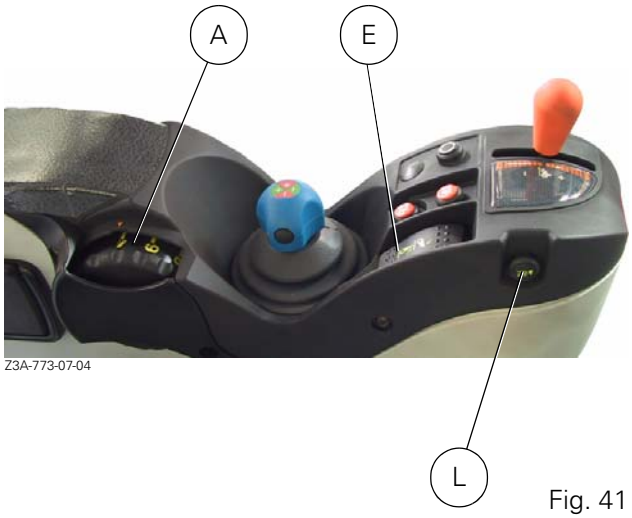


Fig. 41

4.13.1 - Attaching an implement from the driver's seat

Start the engine. Indicator lights (I), (J) and (K) come on.
- (K) and (J) light up for 0.5 second approximately.
- (I) stays on until the console is activated.
- Adjust the control knobs.
- Move the function selector knob (B Fig. 41) clockwise to the lowest position.
- Move the Lift / Lower selector switch (E) to the lift position.
- Adjust the linkage height by turning the control knob (A).
- The Lift indicator light (H) comes on.

4.13.2 - Lowering

To lower the linkage, turn knob (A) clockwise. Lowering indicator light (G) comes on.
In automatic mode, the lowering speed is governed by two parameters: the weight of the implement and the travelling speed. The indicator light (K) comes on when this mode is selected.
Key Fig. 42:
1. Lowering lock position.
2. Lowering speed slow.
3. Lowering speed fast.
4. Automatic mode.

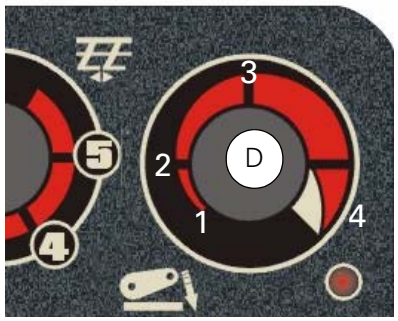


Fig. 42

4.13.3 - Lifting

To lift the linkage turn knob (A) anti-clockwise.
The Lift indicator light (H) comes on.

4.13.4 - Depth control

Use knob (A) in position 1 (min.) to 7 (max.) to determine the depth of work.
Between positions 8 and 9, the linkage is floating.

4.13.5 - Attaching an implement using external controls

To use the external controls (Fig. 43) the Lift / Lower selector switch (E) must be in Neutral or Lower position.

DANGER: Always place gear shift lever and Power Shuttle control lever in NEUTRAL before leaving the driver's seat.

Activate the "ParkLock" brake control.

When selector switch (E) is in the Neutral or Lower position, simply press the external control buttons to raise or lower the linkage.

NOTE: The arms stop moving as soon as the button is released.

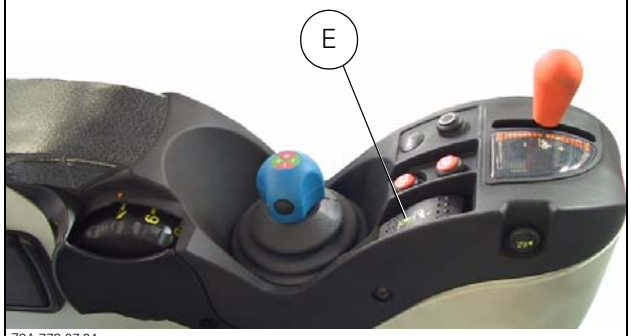
When the external control is used, the lowering speed is 70% of the maximum speed (the speed setting D does not operate).

For safety, when the external buttons are operated, the cab linkage controls are automatically switched off.

To switch the cab controls back on, press the selector switch (E Fig. 44).

OIB-06-02036

Fig. 43



Z3A-773-07-04

Fig. 44

4

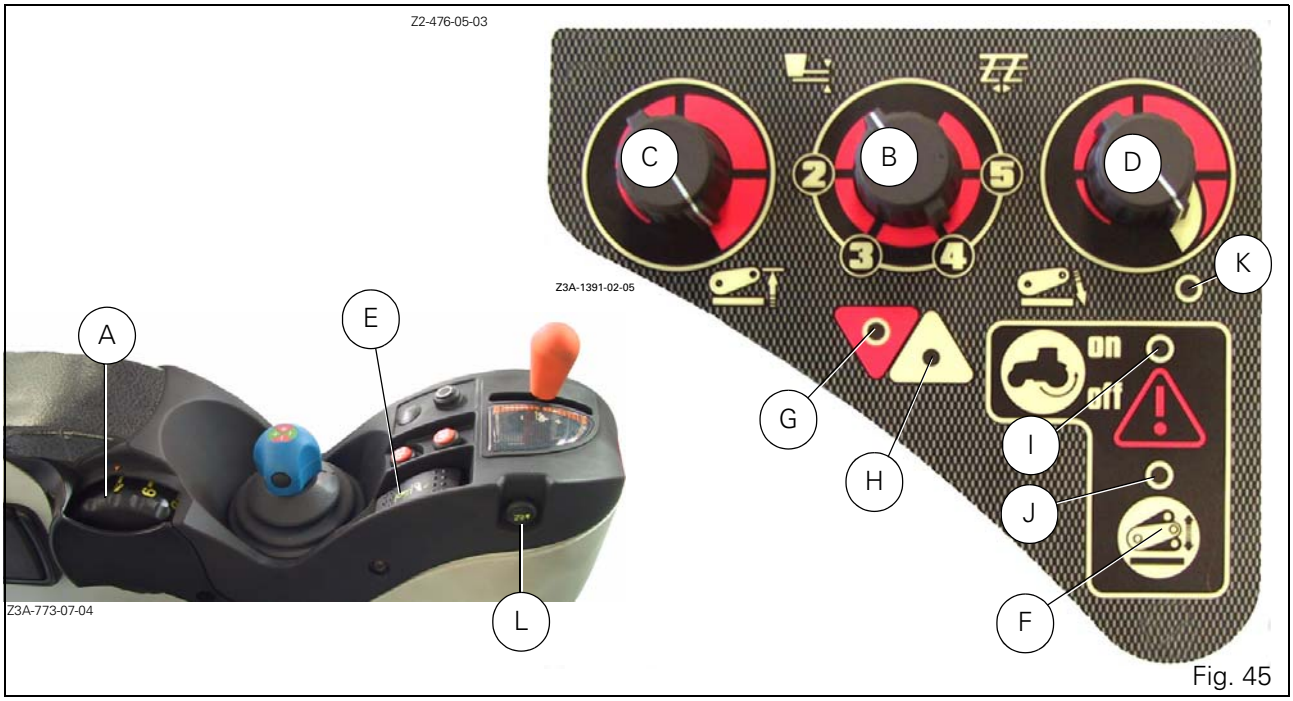


Fig. 45

4.13.6 - Transport

- Select the minimum position using knob (B Fig. 45).
- Adjust the maximum linkage height according to the transport implement using the height setting knob (C). Start from the lowest position.
  Move knob (D) to position 1 (padlock).

4.13.7 - Active transport control system

- The system operates automatically when button (F) is pressed; indicator light J comes on.
- To deactivate this function, press button (F).

4.13.8 - Quick soil engagement

- Move the selector switch (E) to the Lower position, press and hold button (L) to trigger quick soil engagement.
- Release as soon as the plough is engaged into the soil.

4.13.9 - Operation when working

- Adjust the maximum Lift position using knob (C).
- Use knob (D) to adjust the maximum linkage lowering speed.
- Choose the implement control mode (Draft, Position or Intermix Control), according to the implement, the ground conditions and the type of work, using the selector switch (B).
- Adjust the working depth using knob (A).
- The Lift and Lower indicator lights (H) and (G) are used to indicate the work being carried out.

4.13.10 - Operation at headlands

Move the Lift / Lower selector switch (E) to the Lift position. The linkage will rise to the preselected maximum height setting (C).

In order to resume work, move the Lift/Lower selector switch (E) to "Lower". The settings previously made will be repeated.

NOTE: A safety cut-out puts the linkage system out of operation when the ignition is switched off, the engine stopped (ignition switched off), or external controls are used.

The purpose of this device is to avoid any accidental and dangerous movement of the linkage if someone alters the settings on the console while the tractor is stationary.

To reactivate the linkage, move switch (E) to the intermediate position, then to the Lift position. The linkage is then brought back into operation and the padlock (N Fig. 46) in the Datatronic 3 window disappears, if this is installed.

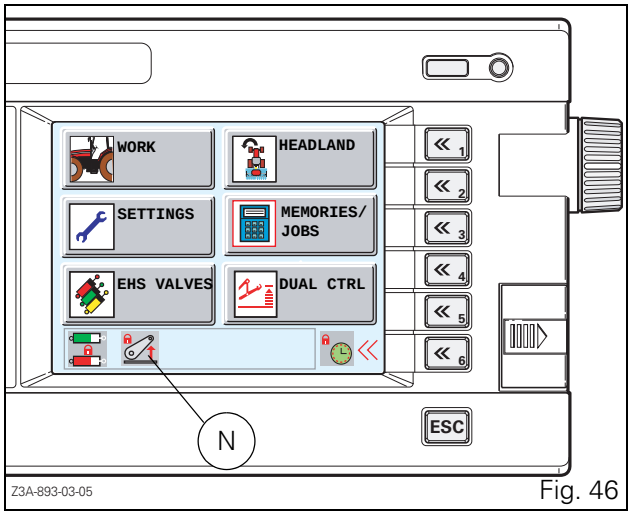


Fig. 46

Before reactivating the ELC calculator, ensure that settings (C) (depth and (A) (selection) cannot cause any dangerous movement of the linkage.

4.14 - AUXILIARY HYDRAULICS

4.14.1 - General

Tractors are designed to be fitted with up to 5 hydraulic valves.

Type of control (Fig. 47; Fig. 48):
Bosch SB23 electro-hydraulic valves controlled by levers inside the operator cab (A) by a joystick B on the armrest or the SMS finger controls (FingerTip D).

Z3A-784-08-04

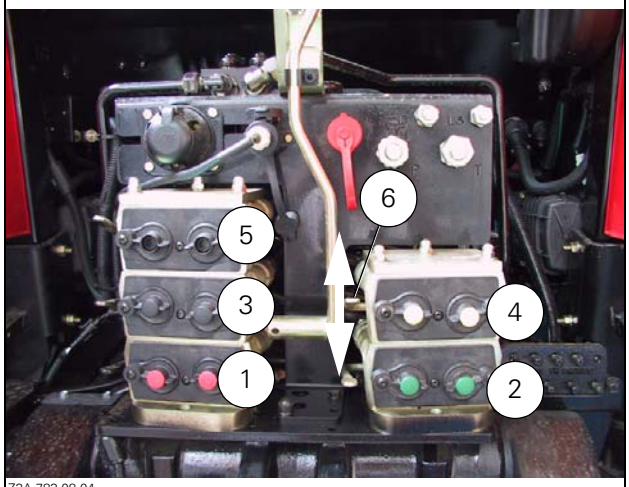
Fig. 47

OIB-06-02044

Fig. 48

4.14.2 - Hose connection

The colour on the lock control for each lever (C) and the colours on the joystick match the colours on the covers of each auxiliary hydraulic valve (Fig. 49).



Z3A-783-08-04

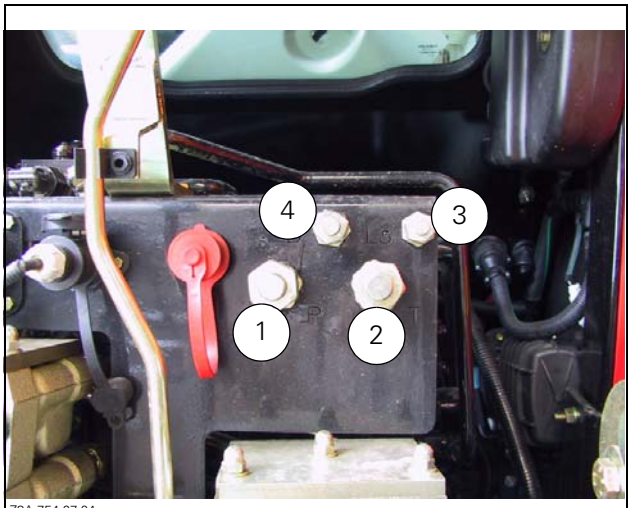
Fig. 49

Colours:
1. Red
2. Green
3. Black
4. Yellow
5. Blue

IMPORTANT: The two hoses of one ram must be connected on the same auxiliary spool valve.

To facilitate disconnecting a hose, move the lever (6) from top to bottom. This will reduce the pressure in the circuit.

Additional spool valve outlets (Fig. 50):
Four additional sockets are provided for cases where the hitched implement needs to use other spool valves:
1. Direct outlet pressure
2. Rear axle return
3. XLS line
4. Rear axle free return

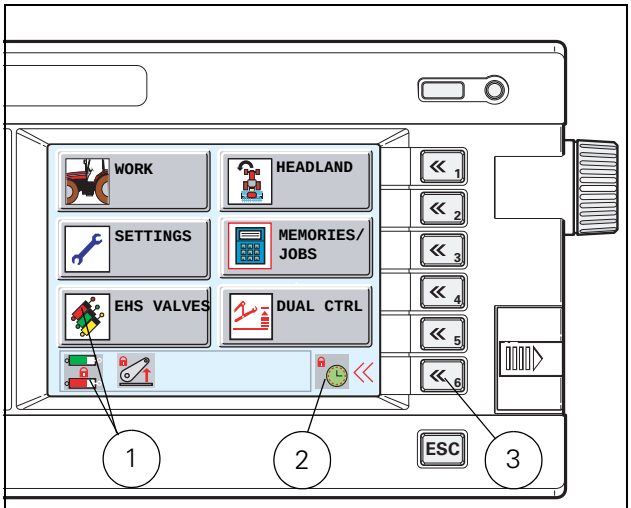


Z3A-754-07-04

Fig. 50

4.14.3 - Unlocking hydraulic spool valve controls

When the tractor is started the hydraulic valves are unavailable. For this reason padlocks are displayed in the first Datatronic 3 window when the tractor is fitted with this option.



Z3A-893-03-05

Fig. 51

1. Locking the hydraulic valve controls: To unlock, press button (4 Fig. 82) (the padlocks disappear and the button's indicator light goes out).
2. Locking the spool valve activation times. To unlock, press the key «$_6$ (3 Fig. 51) (the padlock disappears).

NOTE: If the tractor is not fitted with the Datatronic 3, press only button 4 to unlock. The button indicator light goes out.

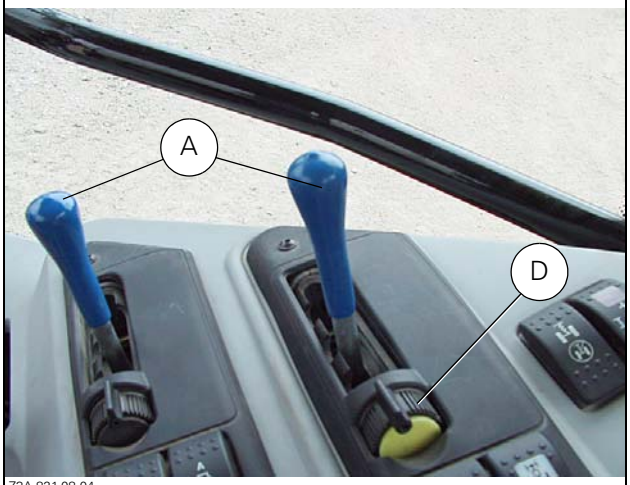
Z4A-1647-11-05

Fig. 52

4.14.4 - Using the control levers (Fig. 53)

Each spool valve controlled by a lever (A) can be blocked in various positions by actuating the lock (D):

- Neutral position (Fig. 53)



Z3A-821-08-04

Fig. 53

• Cylinder rod extraction position (example, Fig. 54)

Z3A-822-08-04

Fig. 54

• Cylinder rod retraction position (Example: Fig. 55)

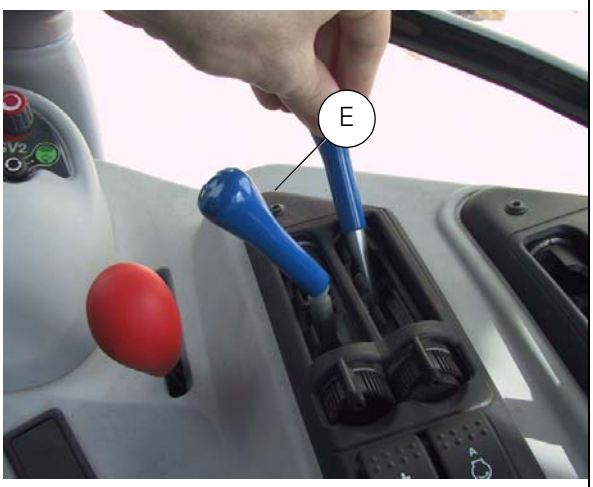
Z3A-823-08-04

Fig. 55

• Floating position (Fig. 56)

To activate the floating position, push the lever to its maximum position (E), then release it. The lever returns to its initial position, while the spool valve is in floating position.

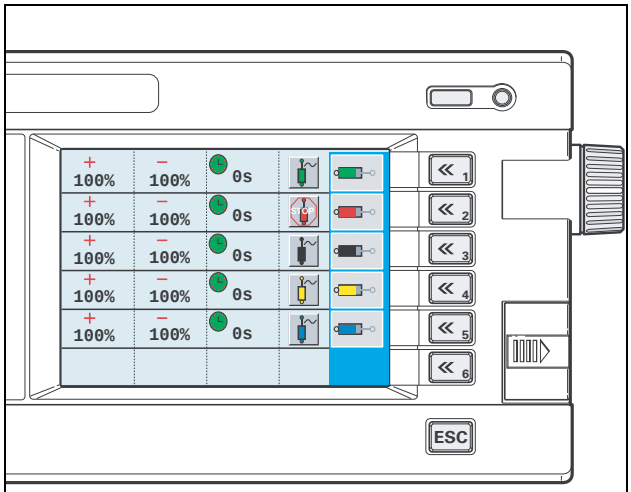
To deactivate the floating position, move the lever to any position. The spool valve switches to neutral position.



Z3A-1001-08-04

Fig. 56

NOTE: If the tractor is fitted with the Datatronic 3, ensure that the "Floating" function is available for each hydraulic valve (Fig. 57). To activate this function, refer to Datatronic 3 Operator Instruction Book.



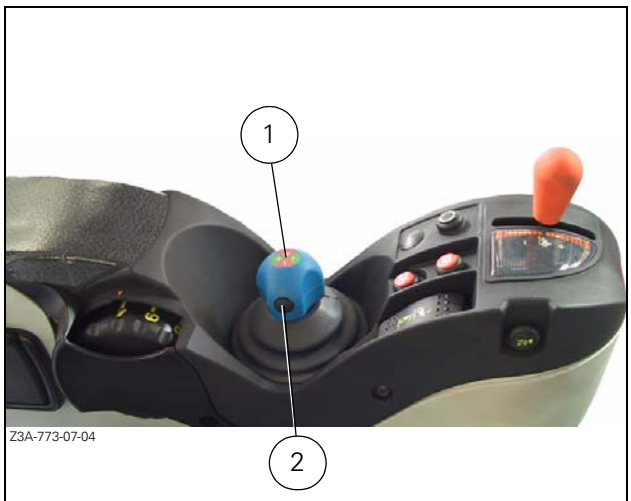
Z3A-1008-08-04

Fig. 57

Floating position unavailable

Floating position available

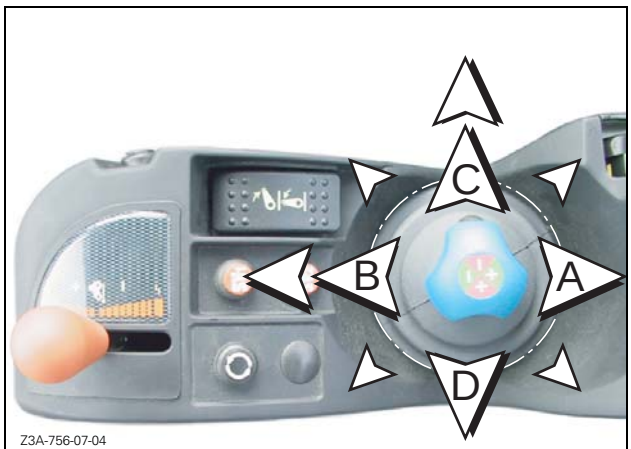
4.14.5 - "SMS" Joystick control:



Z3A-773-07-04

Fig. 58

1. 4-function control Joystick (separate or combined)
   Description (Fig. 59):
   A - Lift
   B - Lower
   C - Empty (bucket)
   D - Fill (bucket)
2. Control button for additional functions (2 Fig. 58), e.g. bucket (open/close jaws). To use this function, press the button and move the Joystick towards C or D.



Z3A-756-07-04

Fig. 59

3. Flow rate memorisation or memorised flow rate reset (B Fig. 60).

4. Hydraulic valve control ON/OFF control (A Fig. 60).

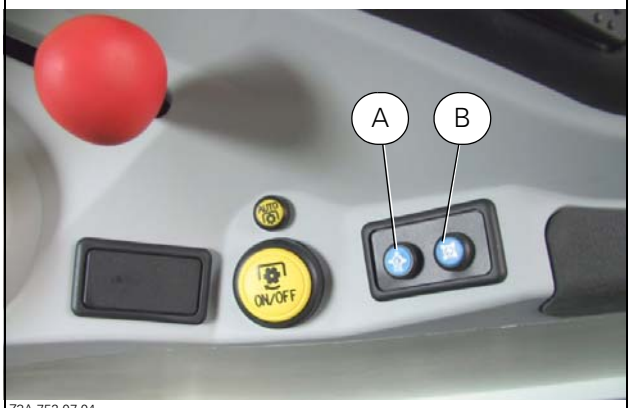


Fig. 60

4.14.6 - Memorising a flow rate:

NOTE: If the tractor is fitted with the Datatronic 3, refer to the specific Operator Instruction Book, the HYDRAULIC VALVES application for memorisation of flow rates and activation times for each hydraulic valve.

This function memorises a flow rate (for example 30% of a spool valve maximum flow rate). Next, when the control is activated, the flow generated shall be that of the stored value.
When the engine is started, the hydraulic valve controls are unavailable and the red indicator light on button (A) is lit.

1. Press button (A) to put the hydraulic valve controls into service; the red indicator light goes out.
2. Move and hold the joystick in the desired direction to obtain the desired flow; the flow stops as soon as the joystick is released.
3. When the joystick is moved to its limit of travel, beyond its locked B1 / C1 floating position, and then released immediately, the flow is automated, and when in OFF position the "~" icon is displayed on the lower screen.

Operation:

- When using a control, regardless of the position used, the flow rate generated will be the one previously memorised.
- To cancel the values, press button (B Fig. 60) for approximately 5 seconds (default value 100%).

4.14.7 - Setting Joystick parameters

- For a correct use of Datatronic 3, refer to the specific Operator Instruction Book.

Flow rate setting (models without Datatronic 3) (Fig. 61)

1. Joystick in neutral: the floating position cannot be used and the available flow rate is at its maximum.
   Joystick in another position: move the joystick in the desired direction(s) and press the button briefly 9 to memorise the flow rate.
   If a memorised flow rate has to be changed or cancelled, move the joystick and hold down the memorisation key (9. Fig. 61) for five seconds. The flow rate returns to its maximum.

All pre-recorded flow rates may be reinitialised in one operation by holding the memorisation key (9. Fig. 61) down for about five seconds, with the joystick in neutral regardless of the version installed. The indicator light 4flashes during this time.

4.14.8 - "SMS" control (Fingertip).

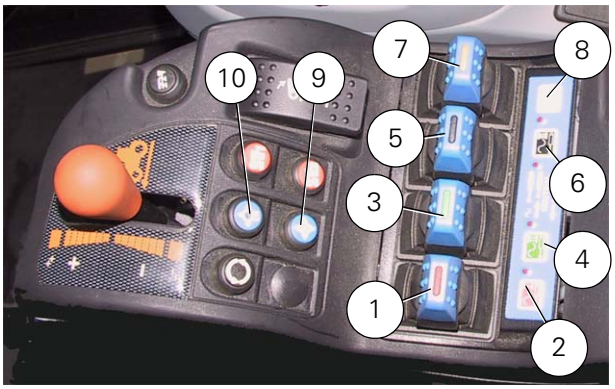


Fig. 61

4.14.8.1 - Description

1. 1st spool valve "SMS" control (red).
2. 1st spool valve constant flow switch and indicator light.
3. 2nd spool valve "SMS" control (green).
4. 2nd spool valve constant flow switch and indicator light.
5. 3rd spool valve "SMS" control (black).
6. 3rd spool valve constant flow switch and indicator light.
7. 4th spool valve "SMS" control (yellow).
8. 4th spool valve constant flow switch and indicator light.
9. Flow rate memorisation or memorised flow rate reset.
10. Spool valve ON / OFF control.

4.14.8.2 - Using the "SMS" controls

Unlock the hydraulic valve controls (see Chapter 4.14.3).

Fig. 62:

A. Neutral position
B. Ram rod retracted position
C. Ram rod extended position
D. Control locking position: It is possible to lock every hydraulic valve controlled by pushing the lever as far as it will go.
11. Spool valve constant flow position switches (Kick out)

Move the "SMS" control to locked position (D) and press the switch that corresponds to its control (matching colours). The red indicator light should come on.

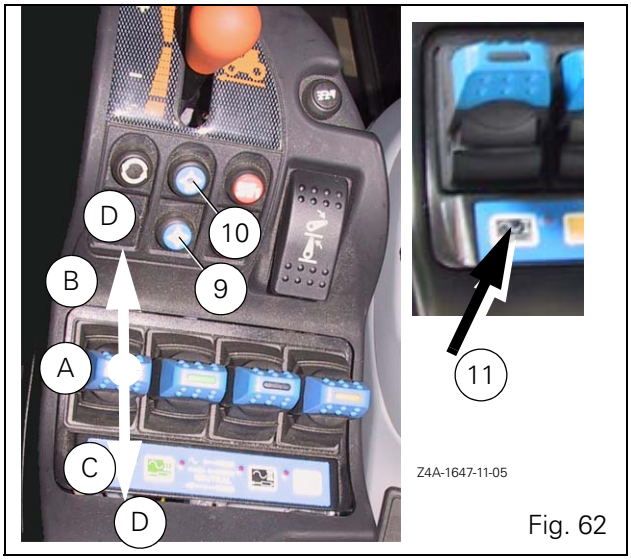


Fig. 62

4.14.8.3 - Memorising a flow rate

NOTE: If the tractor is fitted with the Datatronic 3, refer to the specific Operator Instruction Book, the HYDRAULIC VALVES application for memorisation flow rates and activation times for each hydraulic valve.

When the engine is started, the hydraulic valve controls are unavailable and the button's red indicator light (10) is lit.

When the Datatronic 3 is installed, the corresponding icon in the window is locked (padlock symbol displayed).

1. Press the button 10 to make the hydraulic valve controls operational. The red indicator light goes out (on the optional Datatronic 3 screen, the padlock icon vanishes from the screen) and it is now possible to set the Datatronic 3.
2. Move and hold a spool valve control lever in the desired direction to obtain the desired flow; the flow stops as soon as the lever is released.
3. Move the "Joystick" control to position D and release it immediately to obtain the floating position; the flow rate is automated (the icon is displayed on the Datatronic 3 screen).

4. Still holding the lever in the required position, press the memory key 9 for one second. The flow rate is memorised.

NOTE: When using a control, regardless of the position used, the flow rate generated will be the one previously memorised. To cancel the values, press button (9 Fig. 62) for approximately 5 seconds (default value 100%).

4.14.9 - Emergency manual hydraulic valve control

In case of malfunction of the joystick or spool valve controls, the emergency hand controls are available to lift or lower the installed attachments.

Button 10 (ON/OFF Fig. 62) flashes and the relevant error code is displayed on the tractor on-board computer (if installed).

Operation: Activate one of the levers located on the hydraulic valves by pressing as shown (1) for lowering or by pulling as shown (2) for raising (Fig. 63).

Stop the engine, then restart it to reactivate the Joystick.

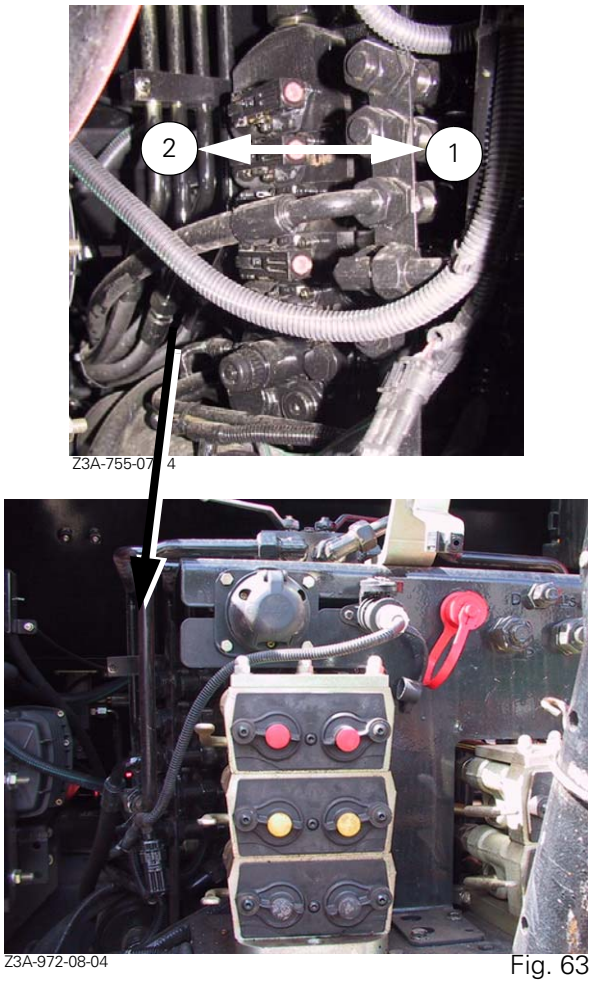


Fig. 63

4.15 - THREE-POINT HITCH

IMPORTANT: To prevent rear linkage damage when operating trailed attachments, care should be taken when turning to prevent the implement from fouling the linkage.

4.15.1 - Hitch

The tractor is supplied with Category 3 ball joint linkage or with optional Category 3 fast linkage hitches.

4.15.2 - Lower links

- Fixed ball end type (Fig. 64)
- Hook and ball type (Fig. 65)

The hooks engage automatically in the ball joints which are fitted to the hitch pins. The normal balls are used for clevis-end linkage; the balls with guide cones are used for single pin linkage. Ensure the linkage is properly locked.

The hooks can be unlocked for uncoupling from the cab, using cables (accessory).

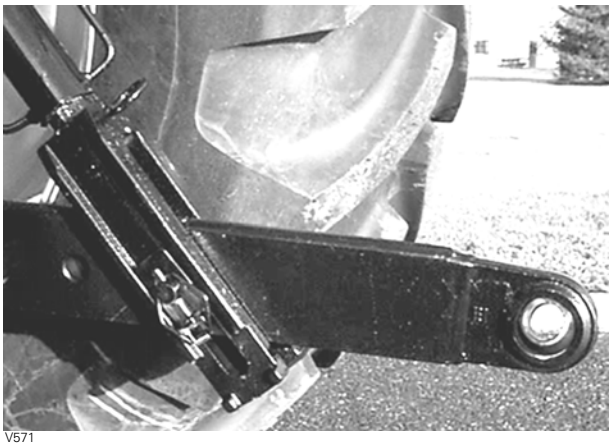


Fig. 64

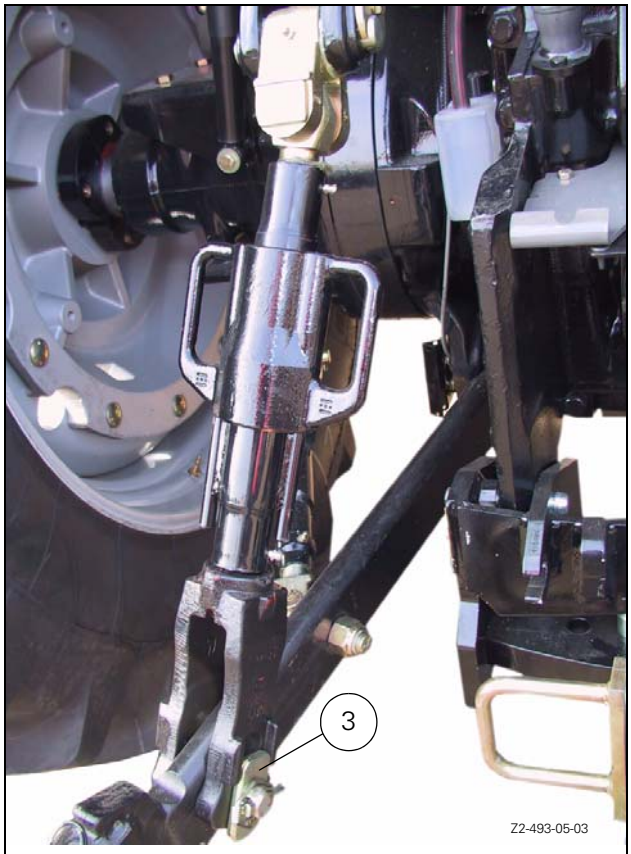
Fig. 65

4.15.3 - Lift rods

(Fig. 66)

The lift rods are fitted with a slot (1) allowing for floating position when the pin (2) is in position (3) (for large implements or implements with a depth wheel).

A fixed low position (4) can be obtained by moving the pin (2).



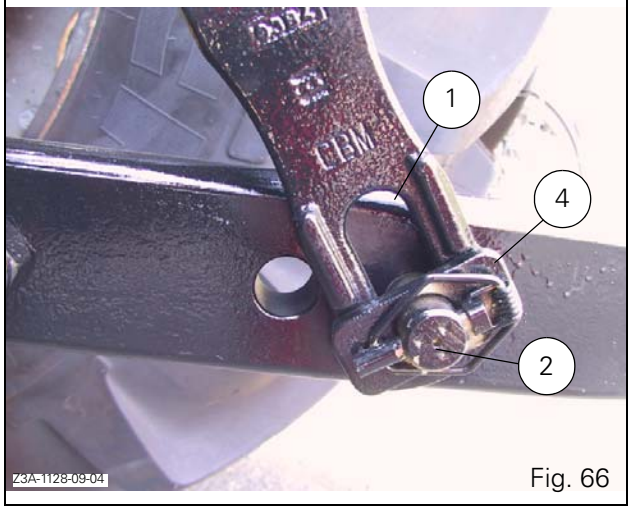


Fig. 66

4.15.4 - Stabilisers

Stabilisers are used to limit the lateral movement of the lower links.
The front stabiliser support has only one possible position (Fig. 67).

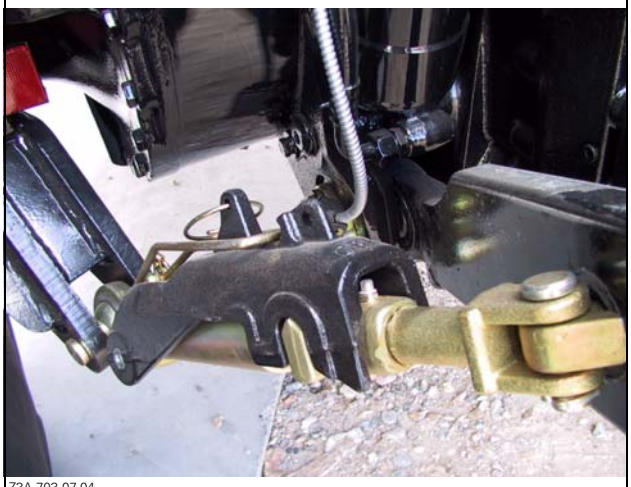

Z3A-703-07-04

Fig. 67

4.15.4.1 - Adjustment procedure

Once the correct position has been determined according to implements used, the stabilisers should be adjusted as follows:

- Pos. 1: Screw or unscrew central section to obtain desired left-hand or right-hand side sway.
- Pos. 2: No side sway in transport position.

NOTE: The side sway is to be adjusted with lower links at transport position.

A. Install Cat. 3 linkage drawbars.
B. Set lift rods length as required.
C. Set lower link travel as shown (Fig. 68).
D. Fully screw in stabilisers.
E. Start the engine.

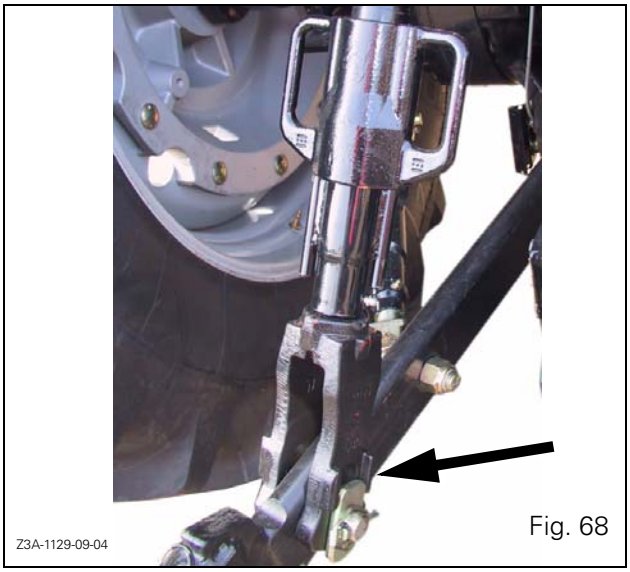

Z3A-1129-09-04

Fig. 68

F. Set the instrument panel "Lift/Lower" switch to "Lift" then to "Neutral".
G. Press the "Lift" button until the lower links reach the highest position.
H. Stop the engine.
I. Unscrew the stabilisers (Fig. 69) until the lower links no longer have side sway and are centralised.
J. Screw both stabilisers in 1 turn.

CAUTION: To avoid damaging the stabilisers, do not increase transport height or reduce the length of lift rods once the above adjustments have been carried out.


Z3A-703-07-04

Fig. 69

4.16 - DRAWBAR AND HITCHES

Available as options, depending on the country.

4.16.1 - Swinging drawbar

(Only suitable for trailed implements) (Fig. 70).

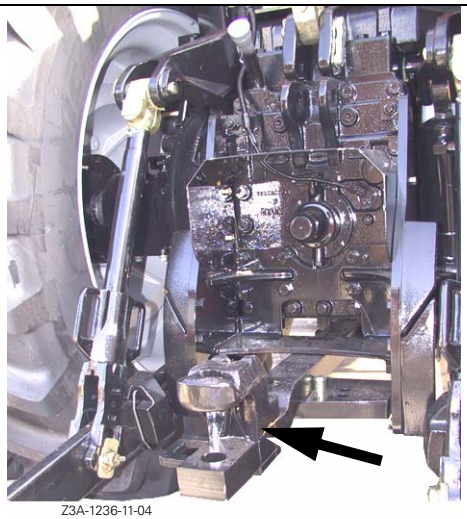


Fig. 70

Setting the offset:

- Remove the clips and take out the clevis pins.
- Position the drawbar as required.
- Refit the clevis pins and secure them with the clips to hold the drawbar in the required position.

Maximum tractable weight: 13000 kg.

Maximum vertical load at hitch point: 1700 kg.

4.16.2 - Stud for semi-mounted trailer

Suitable for heavy trailers which transfer heavy load to the tractor (Fig. 71).

It is welded to the frame of the swinging drawbar and has a safety retaining latch to prevent the hitch ring from rising up.

Maximum vertical load: 3000 kg.

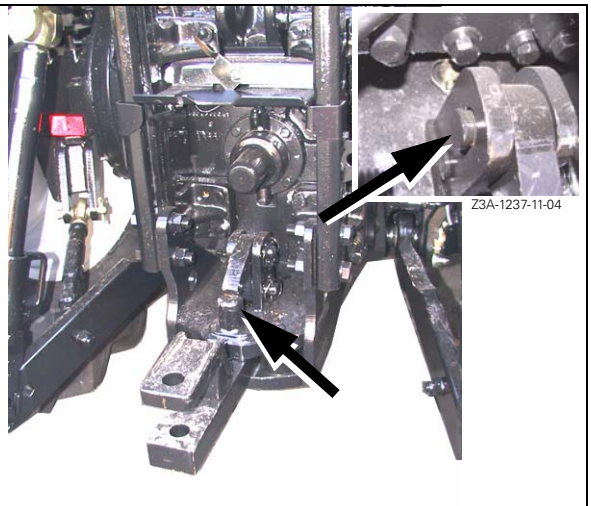


Fig. 71

4.16.3 - Perforated bar

This is fitted to the lower links and is suitable for light loads (Fig. 72).

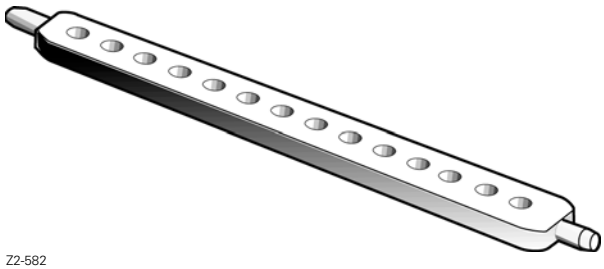


Fig. 72

4.16.4 - Swinging drawbar

(Only suitable for trailed implements) (Fig. 70).

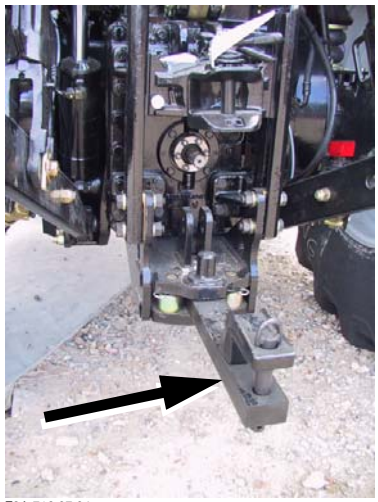


Fig. 73

Setting the offset:

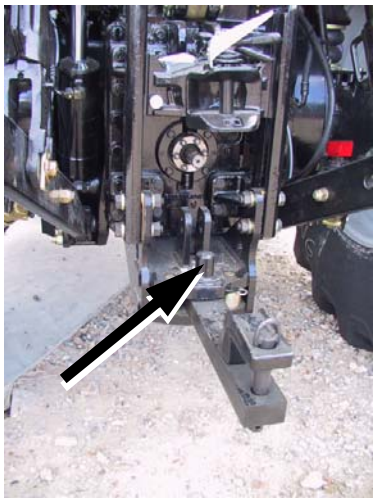
- Remove the clips and take out the clevis pins.
- Position the drawbar as required.
- Refit the clevis pins and secure them with the clips to hold the drawbar in the required position.

Maximum tractable weight: 13000 kg.

Maximum vertical load at hitch point: 1700 kg.

4.16.5 - Stud for semi-mounted trailer

Suitable for heavy trailers which transfer heavy load to the tractor (Fig. 71).



Z3A-716-07-04

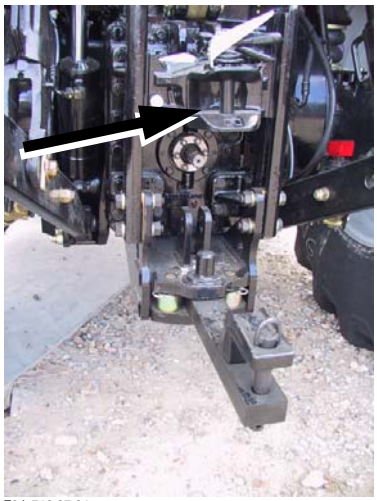
Fig. 74

It is welded to the frame of the swinging drawbar and has a safety retaining latch to prevent the hitch ring from rising up.
Maximum vertical load: 3000 kg

4.16.6 - Roller type swinging drawbar

This drawbar is used with very heavy trailed implements. It moves on a track by means of rollers, which enables it to swing with the implement, thereby facilitating sharp turns at headlands.

4.16.7 - Fast setting clevis for 4-wheel type trailer



Z3A-716-07-04

Fig. 75

To adjust the height of the clevis, pull the lever sideways, to disengage the locking mechanism. The clevis can then be moved up or down to the required position (Fig. 75).
Release the lever to lock the clevis.
Maximum trailer weight: 25100 kg
Maximum vertical load at hitch point: 1800 kg

4.17 - TOWING PROCEDURE AND INSTRUCTIONS

WARNING: Towing: the following instructions MUST be followed when towing:

If the engine is not running:

- Maximum towing speed 10 kph.
- Max. towing distance 8 km.

If the engine is running:

- Towing speed is identical to that of a trailer without brakes at the speed authorised by legislation in force in the country concerned.

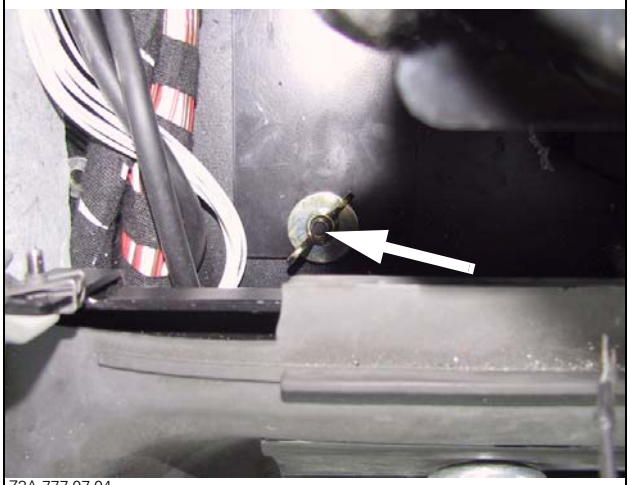
Towing procedure.

1. Open the cover plate located on the cab floor (right-hand side) (Fig. 76).

Z2-597-05-03

Fig. 76

2. Remove the protective shield (Fig. 77 and Fig. 78).



Z3A-777-07-04

Fig. 77

Z2-599-05-03

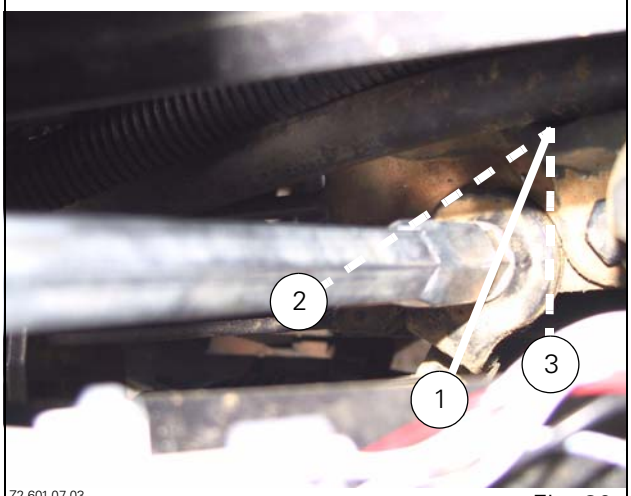
Fig. 78

3. Position the emergency lever on the control unit (C) (Fig. 79).

Z3A-741-07-04

Fig. 79

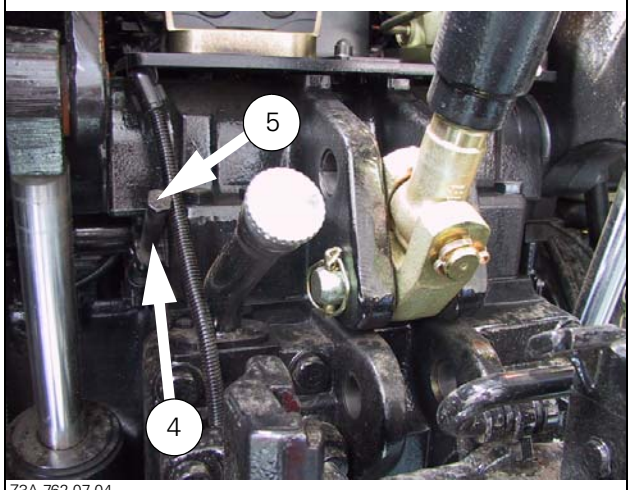
4. Move the TECHstar CVT transmission to neutral position (middle position Ref. 1 Fig. 80).



Z2-601-07-03

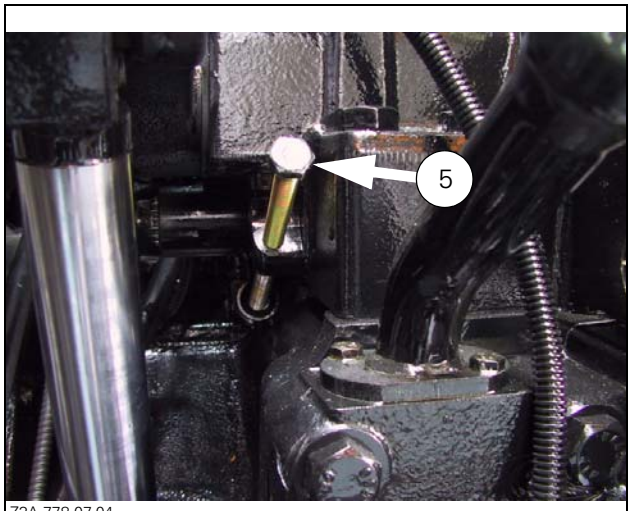
Fig. 80

5. Release the "Park Lock" brake. To do so:
   - take off the spacer (Ref. 4 Fig. 81) having loosened the screw Ref. 5,
   - refit and tighten the screw Ref. 5 (Fig. 82).



Z3A-762-07-04

Fig. 81



Z3A-778-07-04

Fig. 82

4.17.1 - Limp home mode

DANGER: When the tractor is stopped, the gear range must be in neutral position (middle position) and the brake must be engaged.

CAUTION: Once the tractor is started, the transmission is driven totally by meshing if a gear range (hare or tortoise) is engaged. Press down the clutch pedal, because any transmission ratio can be selected.

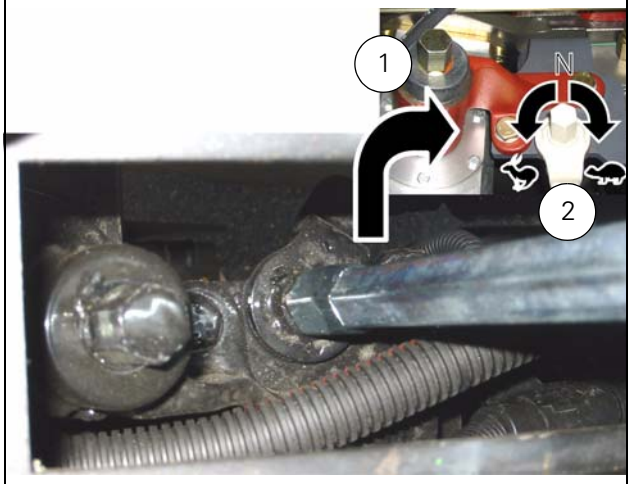
If the transmission ratio control is not possible due to a breakdown, the tractor can be driven mechanically using a limp home lever.

Maximum speed in the "Hare" range is 34 kph when driving forwards and 25 kph when reversing. For the "Tortoise" range, maximum speed is 15 kph in forward position and 11 kph in reverse position.

1. Stop the engine if it is running.
2. Open the cover plate located on the cab floor (right-hand side) (Fig. 76).
3. Remove the protective shield (Fig. 77 and Fig. 78).
4. Position the limp home lever on the range control (Ref. 2 Fig. 83) and select the limp home range:
   - clockwise direction, tortoise range,
   - anti-clockwise direction, hare range.

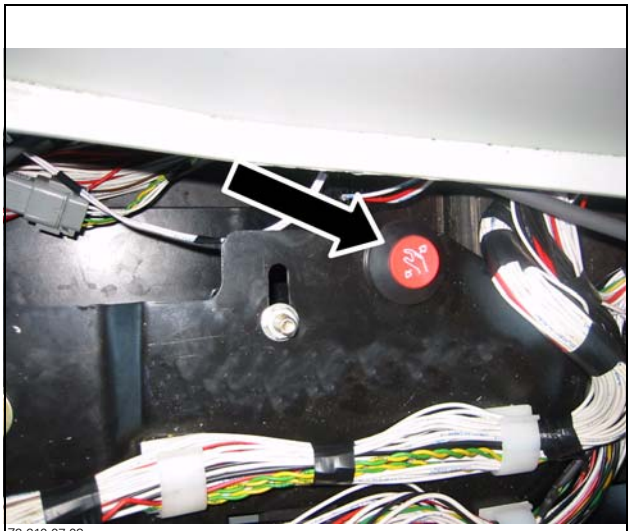
NOTE: The maximum speed when shifting range is 2 kph.

IMPORTANT: When changing range, only use the limp home lever supplied with the tractor, as the coupling mechanism in the control unit could be damaged (max. permitted torque 10 Nm).



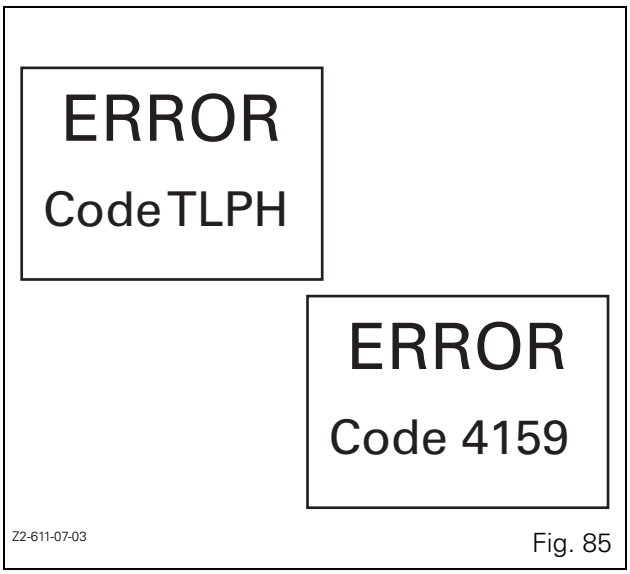
Z2-609-07-03 Fig. 83

5. Start the tractor while pressing down the red button (limp home button) (Fig. 84).



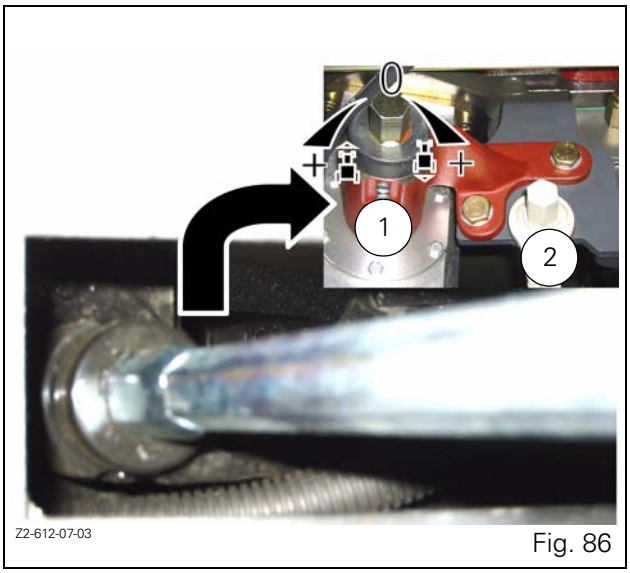
Z2-610-07-03 Fig. 84

6. One of the two fault codes is displayed on the left-hand screen (DOT MATRIX) (Fig. 85).



Z2-611-07-03 Fig. 85

7. Position the limp home lever on the control (Ref. 1) (Fig. 86).



Z2-612-07-03 Fig. 86

12. Turn the lever in the required direction of travel:
   - Anti-clockwise direction, forward travel,
   - Clockwise, reverse travel.

NOTE: Travel speed depends on the rotational value of the lever.

8. Carefully release the clutch pedal. The tractor moves in the previously set direction of travel and manually reaches the selected ratio.
9. To deactivate the limp home mode, stop the tractor and switch off the ignition key.

Chapter 5

SERVICING AND ADJUSTMENTS

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5.1 - INITIAL 50 HOUR SERVICE INSPECTION

Consult your service record book.
The following operations must be carried out, as applicable, by the **Service Engineer**. A charge will be made for service items such as filter elements, lubricants, seals etc.

5.1.1 - Engine, fuel and cooling systems

1. Change the fuel filter.
2. Change the fuel pre-filter.
3. Check tension and condition of air conditioning compressor belt where fitted.
4. Check/clean the dry air filter elements.
5. Check radiator coolant level.
6. Check the tension and condition of the alternator/fan belt(s).

5.1.2 - Electrical circuit and instruments

7. Check the condition of the battery and the electrolyte level.
8. Check tightness of battery connections and battery safety.
9. Check all safety start switches for correct operation.
10. Check all the instruments, indicator lights and sound alarms for correct operation.
11. Check all the lights and indicator lights for correct operation and adjustment.
12. Check all electrically powered devices (heater/fan, radio, windscreen wipers etc.) for correct operation.
13. Check all electronically controlled systems for correct operation.

5.1.3 - Front axle and steering

14. Change the oil in the front axle and final drives (4WD).
15. Grease drive shaft / front axle universal joints (4WD).
16. Grease the steering pivots/suspended front axle (optional).

5.1.4 - Transmission and hydraulics

17. Check the transmission/auxiliary hydraulics oil level.
18. Change oil in the rear final drive units (according to model).
19. Change the transmission oil 10 micron high pressure filter
20. Change the 10 micron return filter (Techstar CVT auxiliary hydraulics).
21. Lubricate the linkage shaft and top up only if not properly sealed.
22. Check the automatic pick-up hitch for correct operation.

5.1.5 - Clutches and brakes

23. Check operation of the clutch pedal.
24. Check the clutch liquid level.
25. Check the condition of the brake pipes.
26. Check the handbrake adjustment.
27. Check the trailer brake valve for correct operation.
28. Check PTO engagement function.

5.1.6 - General

29. Check and top up the windscreen washer bottle.
30. Check the air conditioning system operation.
31. Check tightening torque of ROPS cab / mounting bolts.
32. Check the torque of all wheel and rim nuts and bolts.
33. Lubricate all points with grease or oil as specified in the Operator Instruction Book.
34. Check all safety guards are in place with readable stuck decals.
35. Road test the tractor to check all instruments and systems for correct operation.
36. Road test the tractor to check the steering and brakes for correct operation.
37. Activate all PTO and hydraulic systems to check correct operation.
38. After road test, check for any leaks of oil, fuel or coolant.
39. Enquire if the operator has any operational difficulties and correct or demonstrate the solution as necessary.
40. Complete the owner's Service Record Book.

5.2 - SERVICE GUIDE

SERVICE GUIDE	Inspections according to Service Record Book				
	50h	400h	800h	1200h	2000h
Engine, fuel and cooling systems					
1. Change the engine oil.		●	●	●	●
1. Change the engine oil filter and the centrifugal filter.		●	●	●	●
2. Change the fuel filter.	●	●	●	●	●
3. Change the fuel pre-filter.	●	●	●	●	●
4. Check the valve clearance, replace the cover gasket.		●	-	●	
5. Check the idle speed and fuel cut-off mechanism.		●	●	●	●
6. Check tension and condition of alternator, fan and air-conditioning belts.	●	●	●	●	●
7. Check/clean the dry air filter elements.	●	●	●		●
8. Change the dry air filter elements.				●	
9. Check radiator coolant level.	●	●	●		●
10. Drain, flush and refill radiator with coolant.				●	
11. Clean the main radiator and all other cooler element fins.		●	●	●	●
12. Clean air conditioning condenser.		●	●	●	●
13. Change the dryer.				●	
14. Check the level of smoke emission from the exhaust.		●	●	●	●
15. Grease the water pump.		●	●	●	●
Electrical system and instruments					
16. Check the condition of the battery and the electrolyte level.	●	●	●	●	●
17. Check tightness of battery connections and battery safety.	●	●	●	●	●
18. Check all safety start switches for correct operation.	●	●	●	●	●
19. Check all the instruments, indicator lights and sound alarms for correct operation.	●	●	●	●	●
20. Check all the lights and indicator lights for correct operation and adjustment.	●	●	●	●	●
21. Check all electrically-powered devices (heater/fan, radio, windscreen wipers etc.) for correct operation.	●	●	●	●	●
22. Check all electronically controlled systems for correct operation.	●	●	●	●	●
23. Check there is sufficient contact grease on the multi-pin Deutsch connectors/ add if necessary.		●	●	●	●
Front axle and steering					
24. Check the oil level in the front axle and final drives (4WD).		●		●	●
25. Change the oil in the front axle and final drives (4WD).	●		●		
26. Check front wheel hub/steering pivots/suspension clearance.		●	●	●	●
27. Grease the drive shaft/universal joints (4WD).	●	●	●	●	●
28. Grease the steering pivots/suspended front axle.	●	●	●	●	●
29. Check the steering for correct operation (with and without the engine running).		●	●	●	●
30. Check the steering and wheel alignment (including tyre wear and damage).				●	
Transmission and hydraulics					
31. Check the transmission/auxiliary hydraulics oil level.			Every day		
32. Change the transmission oil.					●
33. Change 150 micron transmission suction strainer.					●
34. Check oil level in the rear final drive units.		●	●	●	
35. Change the oil in the rear final drive units.	●				●
36. Change the 10 micron return filter (Techstar CVT auxiliary hydraulics).	●	●	●	●	●
37. Change the transmission oil 10 micron high pressure filter element.	●	●	-	●	●
38. Change the oil in the auxiliary hydraulics circuit.				●	
39. Change 10 micron breather (Techstar CVT auxiliary hydraulics).		●	●	●	●
40. Lubricate the linkage shaft and top up only if not properly sealed.	●				●
41. Check the automatic pick-up hitch for correct operation.	●			●	

SERVICE GUIDE	Inspections according to Service Record Book				
	50h	400h	800h	1200h	2000h
Clutches and brakes					
42. Check operation of the clutch pedal and transmission.	●	●	●	●	●
43. Check the clutch liquid level.	●	●	●	●	
44. Change the clutch liquid / bleed the circuit.					●
45. Check the condition of the brake pipes.	●			●	
46. Bleed the brakes.					●
47. Check the handbrake adjustment.	●	●	●	●	●
48. Check the trailer brake valve for correct operation.	●			●	
49. Check PTO engagement function.	●	●	●	●	●
General					
50. Check and top up the windscreen washer bottle.	●	●	●	●	●
51. Clean the cab air filter element.		●	●		●
52. Change the cab air filter.				●	
53. Check the air conditioning system operation.	●	●	●	●	●
54. Bleed compressed air circuit water from suspended cab.			Fortnightly		
55. Change cab dampers.				4800H	
56. Check tightening torque of ROPS cab / mounting bolts.	●	●	●	●	●
57. Check the torque of all wheel and rim nuts and bolts.	●	●	●	●	●
58. Lubricate all points with grease or oil as specified in the Operator Instruction Book.	●	●	●	●	●
59. Check all safety guards are in place with readable stuck decals.	●	●	●	●	●
60. Road test the tractor to check all instruments and systems for correct operation.	●	●	●	●	●
61. Road test the tractor to check the steering and brakes for correct operation.	●	●	●	●	●
62. Operate all PTO and hydraulic services to ensure correct operation.	●	●	●	●	●
63. After road test, check for any leaks of oil, fuel or coolant.	●	●	●	●	●
64. Enquire if the operator has any operational difficulties and correct or demonstrate the solution as necessary.	●	●	●	●	●
65. Complete the owner's Service Record Book.	●	●	●	●	●

5.3 - USER GUIDE

5.3.1 - Engine, fuel and cooling systems

1. Check/clean the dry air filter elements (chapter 5.9).
2. Check radiator coolant level (section 5.10).
3. Clean the main radiator and all other cooler element fins (chapter 5.10).
4. Check the level of smoke emission from the exhaust.

5.3.2 - Electrical circuit and instruments

5. Check the condition of the battery and the electrolyte level.
6. Check tightness of battery connections and battery safety.

5.3.3 - Front axle and steering

7. Check the oil level in the front axle and final drives (4WD).
8. Grease the drive shaft/universal joints (4WD) (chapter 5.6).
9. Grease the steering pivots/suspended front axle.
10. Check the steering and wheel alignment (including tyre wear and damage).

5.3.4 - Transmission and hydraulics

11. Check the transmission/hydraulics oil level.

5.3.5 - Clutching

12. Check the clutch liquid level.

5.3.6 - General

13. Check and top up the windscreen washer bottle (chapter 5.7).
14. Lubricate all points with grease or oil as specified in the Operator Instruction Book (chapter 5.6).

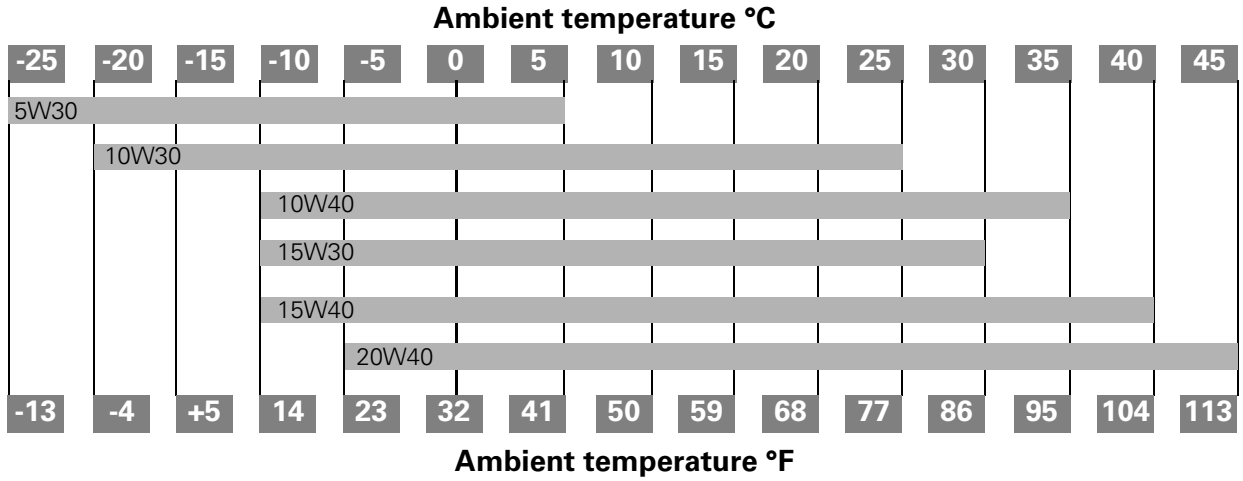
5.4 - APPROVED LUBRICANTS

NOTE: The warranty remains valid only as long as the lubricants used comply with the following classifications, and no other products are used.

5.4.1 - Engine oil

Engine oil complying with standards: API CI4.

5.4.2 - Recommended SAE viscosity grades (SAE J300d)



5.4.3 - Engine coolant

Antifreeze: Permanent type Ethylene/glycol complying with standards BS 6580-1992 (Europe/UK) for Sisu engines.

5.4.4 - Techstar CVT transmission and auxiliary hydraulics

Oil complying with MF standards CMS M1143 or CMS M1144.

5.4.5 - Rear final drive units

Hypoid hydraulic oil according to API-GL5, SAE 85W/90 or SAE 80W90 or SAE 90.

5.4.6 - Clutch

Pentosin CHF 11S liquid

5.4.7 - Front axle, front final drive units

API GL5 - SAE 90

5.4.8 - Grease nipples

Grease: AGCO M.1105 or lithium multi-purpose grease corresponding to the N.L.G.I. indices that follow:

- Temperature consistently below 7° C (45° F): N.L.G.I. No. 1.
- Temperature consistently between 7° and 27°C (45° and 80° F): N.L.G.I. No. 2.
- Temperature consistently above 27° C (80° F): N.L.G.I. No. 3.

5.5 - INSTRUCTIONS FOR PRESSURE WASHING

When pressure washing, protect and do not direct the jet onto the following components:

- Alternator
- Starter
- Radiator
- Front axle pivot pins
- Inspection cover
- Radar
- Harnesses, connections and electrical units
- Safety decals

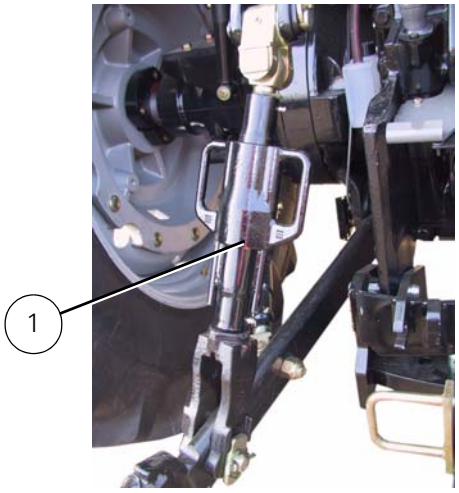
CAUTION: For your safety, all the maintenance operations must be carried out with the engine stopped, unless otherwise specified.

5.6 - GREASING

5.6.1 - Greasing points

Servicing schedule according to Service guide

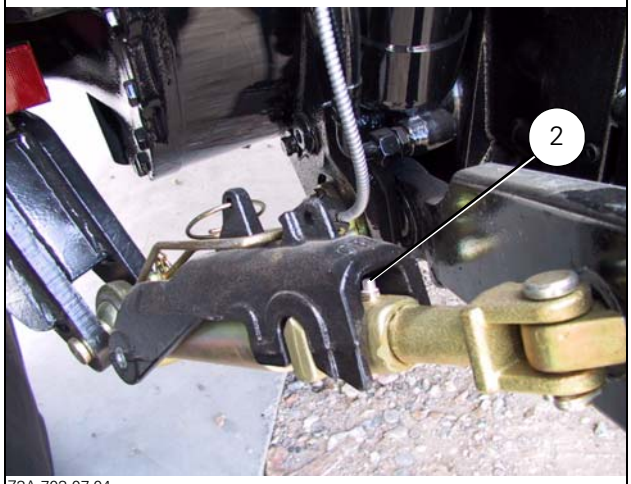
1. Lift rods Ref. 1 (Fig. 1) (4 grease nipples)



Z2-493-05-03

Fig. 1

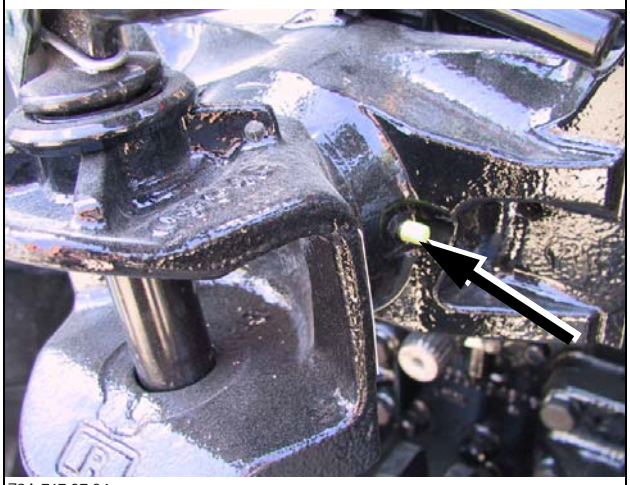
2. Stabilizers Ref. 2 (Fig. 2) (2 grease nipples)



Z3A-703-07-04

Fig. 2

3. Clevis (Fig. 3) (1 grease nipple)



Z3A-717-07-04

Fig. 3

4. 3rd point link (2 grease nipples)

Z3A-774-07-04

Fig. 4

5. Linkage cylinder head (2x1 grease nipple).

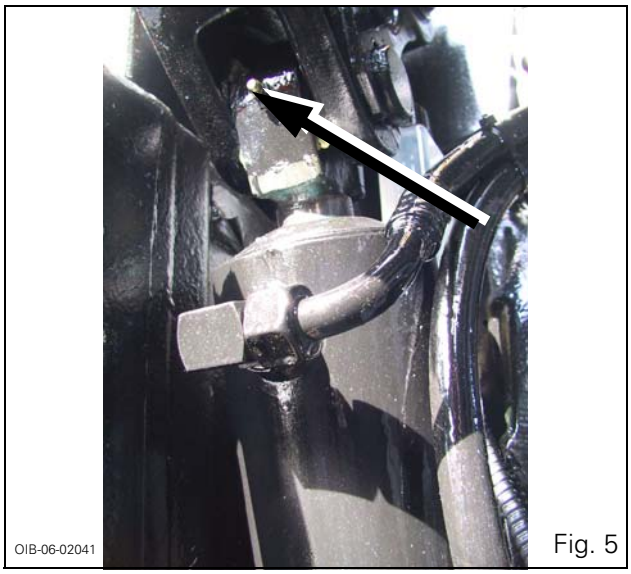


Fig. 5

6. "ParkLock" shaft (2 grease nipples)

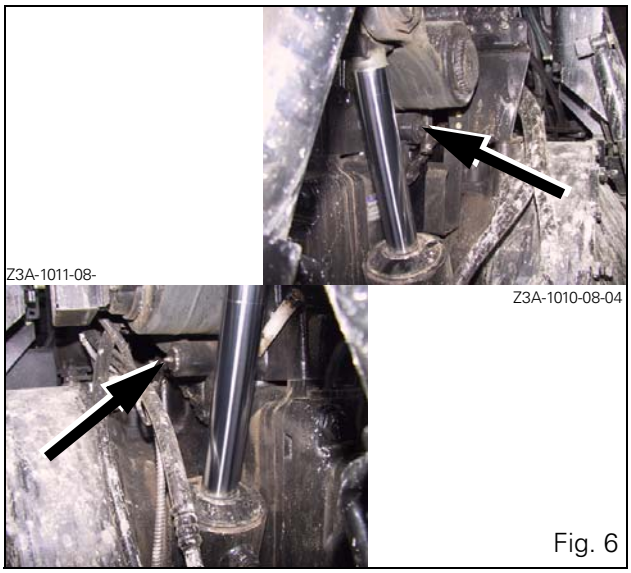


Fig. 6

7. Front and rear bearings for fixed 4WD front axle (2 grease nipples)

NOTE: Raise the front of the tractor to make it easier to grease the front axle.

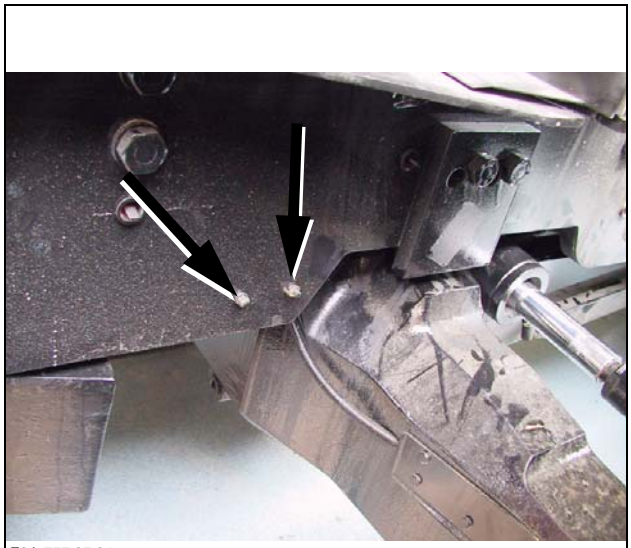


Fig. 7

8. Lower cylinder pivot on suspended front axle 4WD (1 grease nipple).

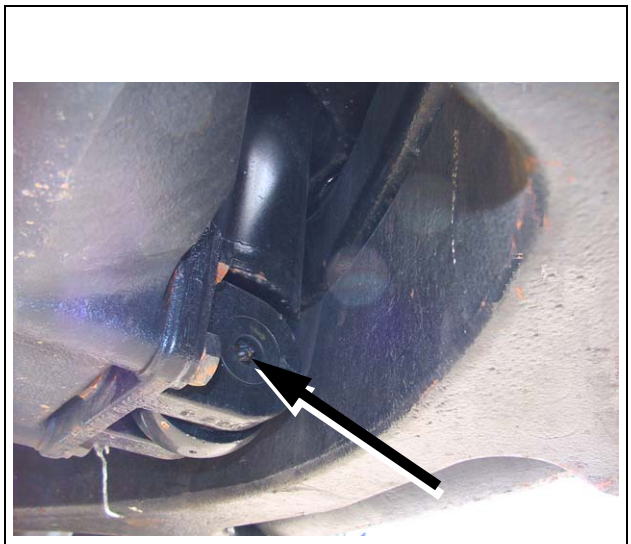
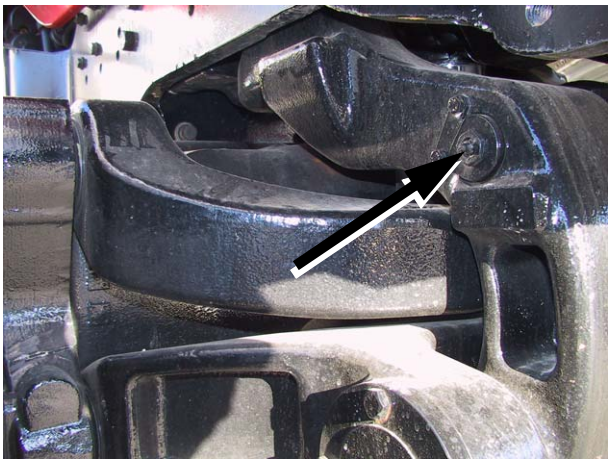


Fig. 8

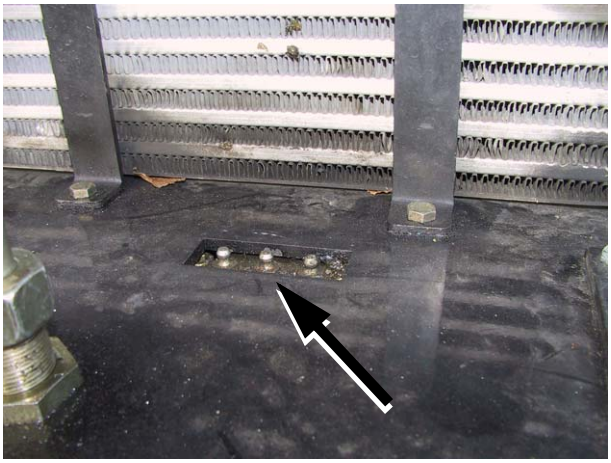
9. Upper front suspension pivot 4WD (1 grease nipple)



Z4A-1634-11-05

Fig. 9

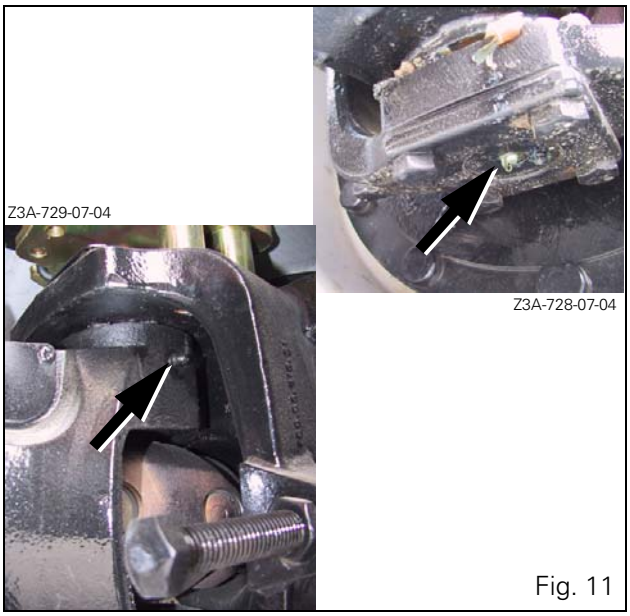
10. Greasing of upper front/rear pivots and the upper ball joint on the suspended front axle 4WD (3 grease nipples)



Z4A-1636-11-05

Fig. 10

11. Front stub pivot pins (4WD) (4 grease nipples)

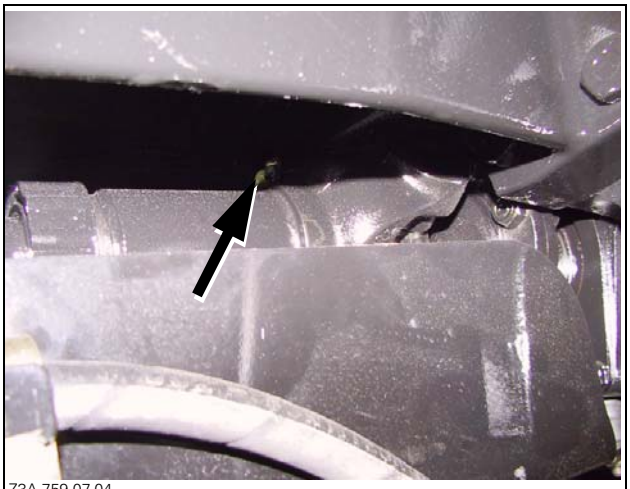


Z3A-729-07-04

Z3A-728-07-04

Fig. 11

12. 4WD drive shaft (rear) (1 grease nipple)



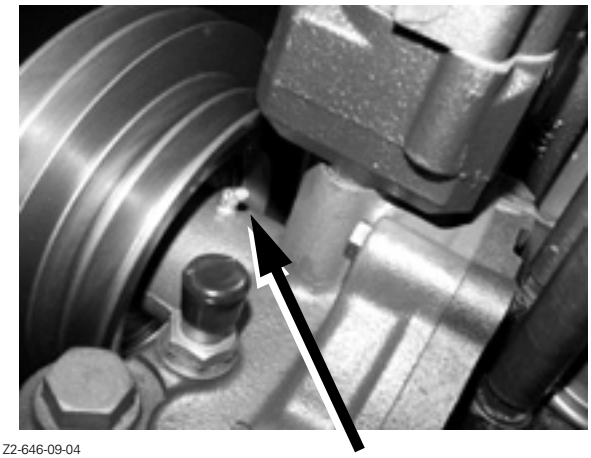
Z3A-759-07-04

Fig. 12

13. Fan belt self-tensioning idler (1 grease nipple)

Z3A-720-07-04 Fig. 13

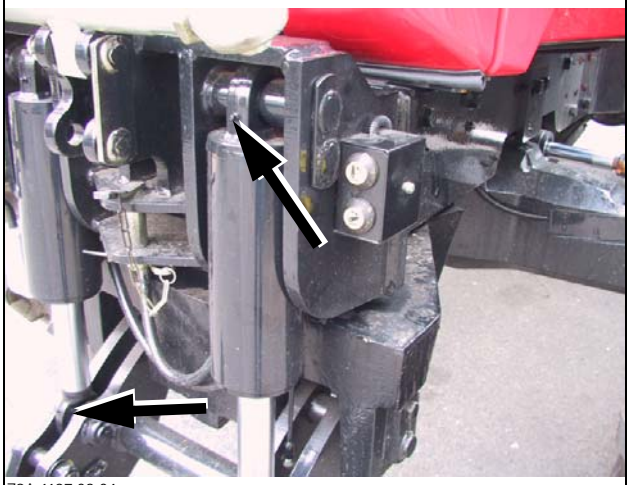
14. Water pump (1 grease nipple)



Z2-646-09-04 Fig. 14

15. Front linkage cylinders (2 lower grease nipples and 2 upper grease nipples)

During long storage periods, ram rods should not come into contact with the air (risk of corrosion and consequent leakage). Rams should be fully retracted or greased.



Z3A-1127-09-04 Fig. 15

16. Lower front lift arm joints (2 grease nipples)

Z3A-1126-09-04 Fig. 16

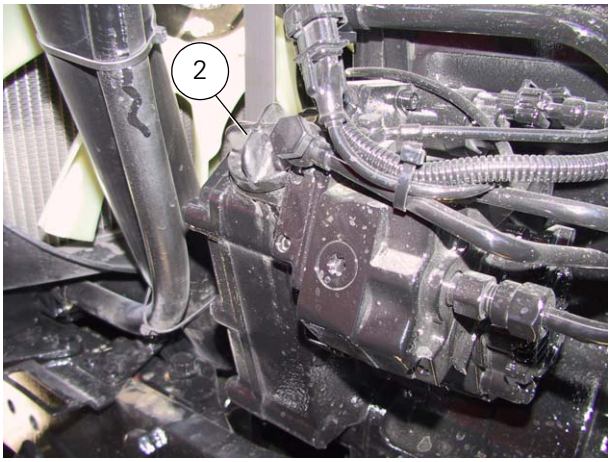
5.7 - ENGINE

5.7.1 - 6-cylinder engine

1. Engine oil drain plug (Fig. 17)
2. Oil filler plug (Fig. 18)
3. Engine oil dipstick (Fig. 19)
4. Oil filter (Fig. 20)
5. Fuel prefilter (Fig. 20)
6. Fuel filter (Fig. 20)
7. Windscreen washer bottle (Fig. 21)

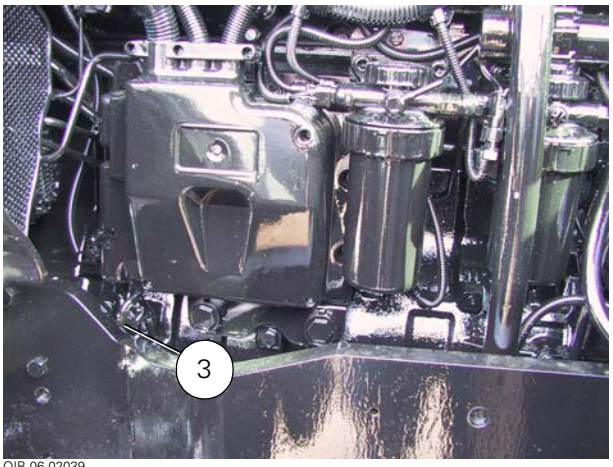
Z3A-760-07-04

Fig. 17



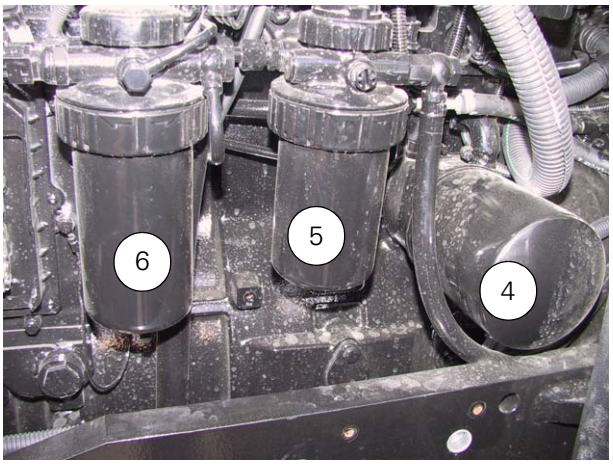
Z4A-1626-011-05

Fig. 18



OIB-06-02039

Fig. 19



Z4A-1627-11-05

Fig. 20

OIB-06-02040

Fig. 21

5.7.2 - Oil level

IMPORTANT: Stand the tractor on level ground, with the front axle suspension disengaged.

Check the engine oil level every ten hours or daily (this interval is flexible).

To avoid heavy oil consumption:

- Do not exceed the MAX mark on the dipstick.
- Do not refill until the level reaches the MIN mark on the dipstick.

  Top up if necessary.

5.7.3 - Drain the engine oil every 400 hours

With the tractor standing on level ground, drain the oil when the engine is warm having removed the plug from the engine sump (1. Fig. 17).

Refit and tighten the drain plug to a torque of 3.5 daNm.

Refill with a recommended oil to the **MAX** mark on the dipstick.

NOTE: Allow time for the oil to settle in the sump before rechecking the level.

An interval of 400 hours is the maximum. In difficult working conditions, the oil may need changing more frequently (every 200 hours for example).

5.7.4 - Change the engine oil filter and the centrifugal filter every 400 hours

To replace the filter 4 and 4A (Fig. 22)

1. Wait a few minutes to allow the oil to flow into the engine.
2. Unscrew and discard the filter assembly.
3. Fill the new filter slowly with clean oil.
4. Smear a few drops of clean engine oil on the new sealing ring, then place the ring on top of the new filter.
5. Screw the filter onto the filter head until the sealing ring touches the filter head, then tighten it a further half-turn by hand only (do not overtighten).
6. Ensure that there is oil in the sump.

CAUTION: After changing the oil and the filter, ensure that the engine will not start and operate the starter motor until oil pressure is obtained; wait for the 5 bar oil pressure light to go out. To ensure that the engine will not start, disconnect the electrical stop control of the fuel injection pump. Run the engine and check for leaks, then recheck the oil level and top up if necessary. The rocker arm clearance should be checked by your dealer or agent, initially after 400 hours, then once every 1200 hours.

5.8 - FUEL SYSTEM

5.8.1 - Fuel prefilter

Check the prefilter bowl for water at regular intervals and drain as necessary (5 Fig. 22).

Change the 150 micron element every 400 hours.

5.8.2 - Fuel filter

Drain the water every 100 hours.

Place a receptacle beneath each element, then open the tap to allow water and sediment to run out, close the taps, then operate the fuel lift pump.

Replace the filter element every 400 hours (6 Fig. 22).

Discard the old filter element as required by environmental protection regulations.

1. Clean the filter and surrounding area.
2. Loosen the fast fitting ring A and remove the filter element.
3. Fill and fit the new filter element.
4. Turn the fast fitting ring until it clicks into the ON position.
5. Switch on the ignition and allow the electric fuel lift pump to operate for 30 seconds. Start the engine and check that the fuel filter is leaktight.
6. Bleed the fuel system.

NOTE: To avoid water condensation in the fuel tank, refill with fuel at the end of the working day.

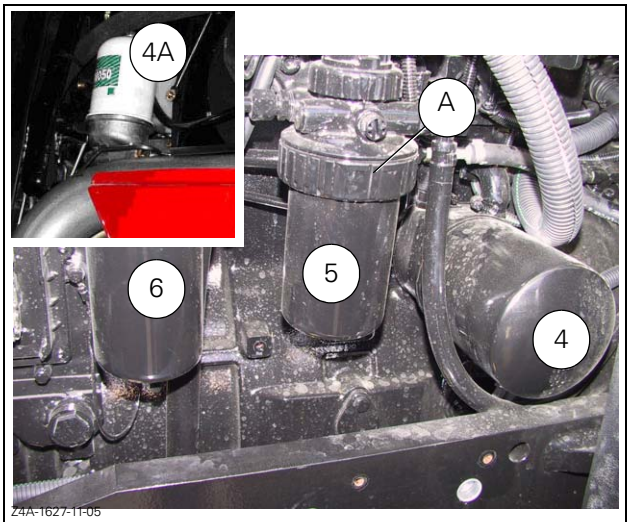


Fig. 22

Bleeding the fuel system

For your tractor engine to run correctly, the fuel system must be in perfect condition and free of air.

The bleeding of the fuel supply system is automatic.

Do not disconnect any unions or pipes.

IMPORTANT: Never activate the starter for more than 30 seconds in one go to avoid overheating.

5.8.3 - Fuel injection pump, regulator and injectors

The injection pump and injectors must be adjusted and checked by your dealer or agent.

5.8.4 - Fuel tank

Drain the fuel tank every 1200 hours.

1. Empty the tank as thoroughly as possible through its filler port using a pump.
2. Drain any remaining fuel through the hose under the tank (Fig. 23).

Z3A-775-07-04

Fig. 23

5.9 - AIR FILTER

Stop the engine before changing the main element.

5.9.1 - Prefilter and main filter

Main filter (A Fig. 24 and Fig. 25)

- Clean the main filter if the blockage indicator light comes on.
- Replace the filter after it has been cleaned five times or every 1200 hours.

Replacing prefilter (B Fig. 26)

- Replace the prefilter after the main filter has been changed or cleaned five times, or once a year or every 1200 hours.

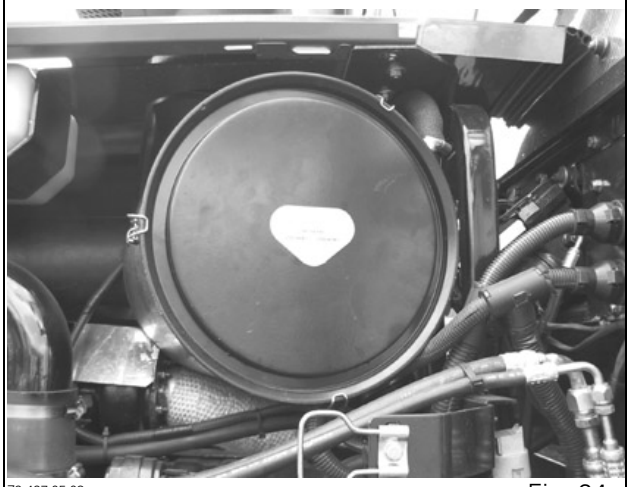
Check that the filter body is not damaged and ensure that all collars and hoses are tight.

1. Lift the left-hand bonnet panel.
2. Remove the prefilter and filter (A) and (B).
3. Clean the main element as outlined below, depending on its condition:
   - blow a jet of compressed air onto the filter, from the inside outwards, at a maximum pressure of 5 bar, keeping the filter sufficiently far from the nozzle.

   After cleaning, ensure the prefilter is not damaged by illuminating the inside to check that there are no holes, and check the condition of the seals.
4. Before refitting the element, wipe the filter body with a damp cloth to remove any dust.
5. If the blockage indicator light comes on after a short period of work, the element is unusable and must be replaced. However, if the light stays on after the external element has been replaced, the internal element must also be changed.

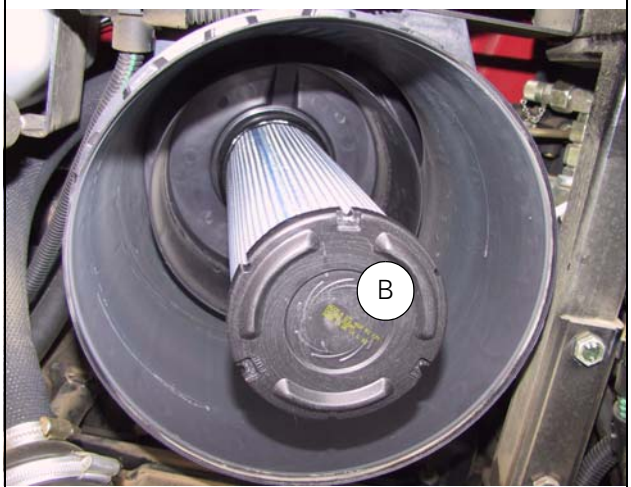
DO NOT TAP IT AGAINST A HARD SURFACE TO CLEAN IT.

CAUTION: Do not attempt to blow the main element clean using the engine exhaust fumes. Never apply oil to a dry element. Never use petrol, paraffin or cleaning solvents to clean an element.



Z2-497-05-03 Fig. 24

Z3A-724-07-04 Fig. 25



Z2-499-05-03 Fig. 26

5.10 - COOLING SYSTEM

Check the coolant level every ten hours (this interval is flexible).

The coolant quality can have a great effect on the efficiency and life of the cooling system.

The antifreeze/water ratio must always be 40-50% antifreeze to 60-50% water.

The minimum 40/60 mixture must be used even in "non-cold" regions, so as to raise the boiling point and protect the system against corrosion.

The water used should be clean, soft and non acidic.

Use a permanent type Ethylene/glycol mix according to the following specifications:

Coolant specifications.

Use the coolant recommended by AGCO. The liquid must meet the following standards:

Sisu engines: ATSM D3306-74 (USA) - BS 6580-1992 (Europe/UK).

Check the quality and level of mixture regularly and avoid the addition of pure water in the system, as this will dilute the mixture.

NOTE: Never use pure water as a coolant.

IMPORTANT: If the correct procedures are not followed, AGCO cannot be held responsible for any damage caused.

Change the coolant every 1200 hours.

Clean the radiator fins every 400 hours (variable frequency) using compressed air.

Check the fan belt tension every 100 hours.

Expansion tank (Fig. 27)

Periodically check the level of coolant in the expansion tank, the red indicator light comes on as soon as the minimum level of coolant is reached.

NOTE: When filling, do not exceed the mid-way point on the tank.

IMPORTANT: After filling, clean traces of liquid from the filling port.

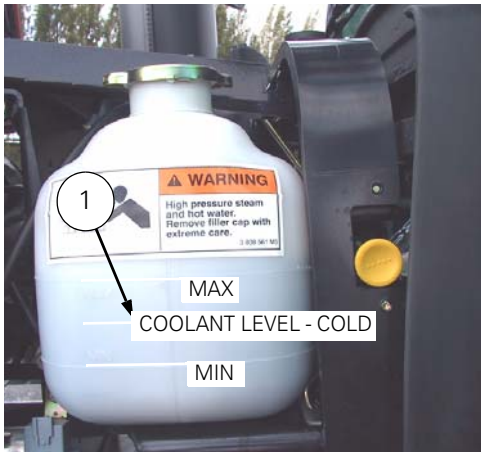
WARNING: If the engine is very hot, loosen the plug at the first clevis before removing it to lower the expansion tank pressure.

5

After filling:

1. Open the heater tap fully and run the engine at 1000 rpm for several minutes.
2. Then stop the engine, recheck the level and, if necessary, top up the expansion tank with coolant (ref. 1). Refit the plug.

CAUTION: Precautions against freezing: Check the protection level of the mix before the cold season.



Z3A-2104-12-04

Fig. 27

5.11 - STEERING, TRANSMISSION AND AUXILIARY HYDRAULICS

Two circuits carry out the functions. One circuit for the transmission and another for the auxiliary hydraulics.

5.11.1 - Transmission and final drive unit hydraulics

5.11.1.1 - Change the transmission oil every 2000 hours

IMPORTANT: Stand the tractor on level ground, with the front axle suspension disengaged.

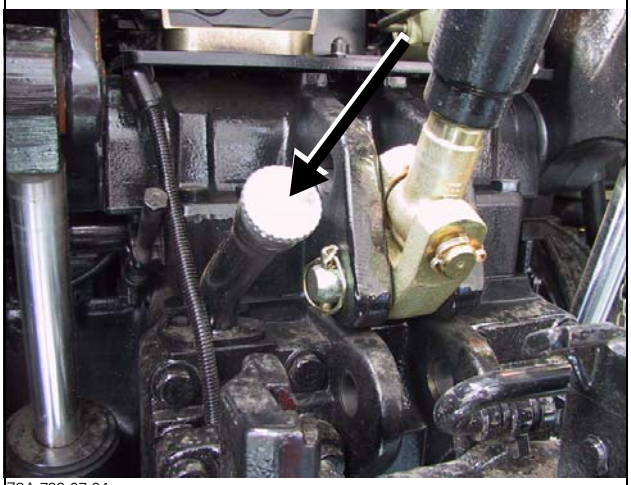
1. Do not drain until the transmission oil is hot.
2. Remove the drain plugs (Fig. 28) and the filler cap (Fig. 29).
3. Refit the drain plugs, then refill the transmission to the correct level (Fig. 30) with an approved oil.

NOTE: Allow time for the oil to settle in the transmission and the rear axle before rechecking the level.

Z2-503-05-03

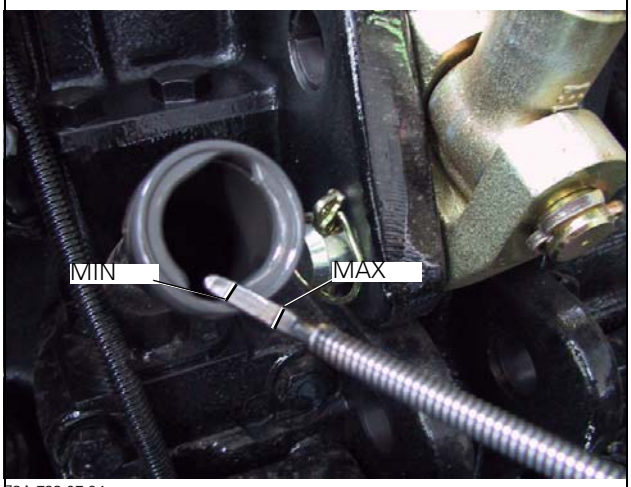
Fig. 28

IMPORTANT: When you change transmission oil, you MUST bleed the braking circuits. If necessary, consult your nearest AGCO dealer.



Z3A-762-07-04

Fig. 29



Z3A-763-07-04

Fig. 30

5.11.1.2 - Change the 150 micron suction strainer (Fig. 31) every 2000 hours

Release the three screws from the retainer plate, and extract and discard the strainer.

Fit the new strainer in its place. Fit the retainer plate and tighten the three attachment screws.

Z3A-726-07-04

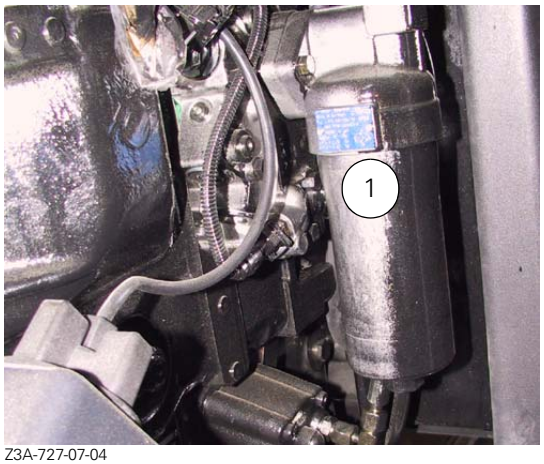
Fig. 31

5.11.1.3 - High pressure 10 micron filtering

400 hours the first time, then every 800 hours, replace the high pressure filter element located on the right-hand side of the housing (1 Fig. 32).

- Unscrew the filter body, pull out the filter element, allow to drain fully, and discard it.
- Replace the seal every 800 hours, or as necessary.
- Slide the new filter element onto the filter head.

  To avoid contamination with foreign material (mud etc.), do not remove the protective plastic completely until the filter element is in place.
- Replace the filter body and screw hand-tight until it locks.



Z3A-727-07-04

Fig. 32

5.11.1.4 - Draining the oil from the final drive units

Every 2000 hours

• Unscrew the drain plug (Ref. 2, Fig. 33).

Z2-606-05-03

Fig. 33

• Refit the drain plug.

• Top up the level through the filler cap (3, Fig. 34). The oil level should be 55 mm below the filler cap.

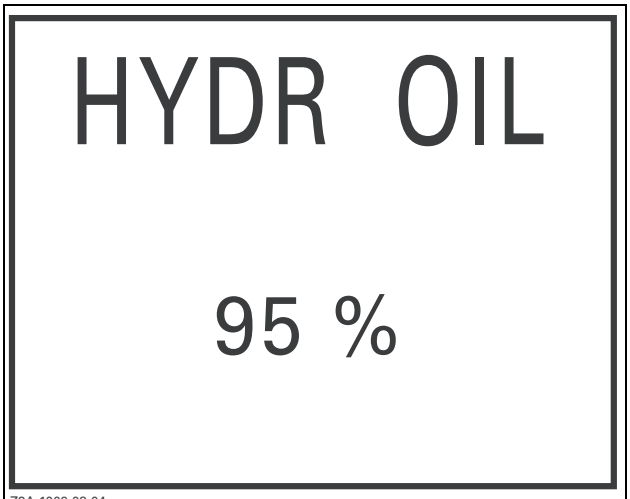
Z2-607-05-03

Fig. 34

5.11.2 - Auxiliary hydraulics

As soon as the instrument panel is powered up, the DOT MATRIX screen displays the auxiliary hydraulic oil level in percentage (Fig. 35).

IMPORTANT: Stand the tractor on level ground, with the front axle suspension disengaged.



Z3A-1009-08-04

Fig. 35

- 100%: tank full.
- 50%: warning threshold.

When the auxiliary oil tank level drops below 50%, it is displayed in priority on the DOT MATRIX screen.

IMPORTANT: When the oil level drops below 50%, top up as soon as possible.

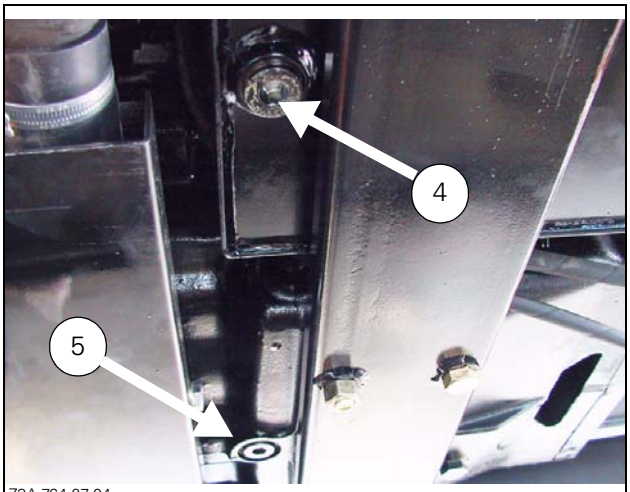
5.11.2.1 - Draining the auxiliary hydraulics

IMPORTANT: Stand the tractor on level ground, with the front axle suspension disengaged.

Every 1200 hours

To carry out the draining, the oil must be hot and linkage must be in lowered position with all rams retracted.

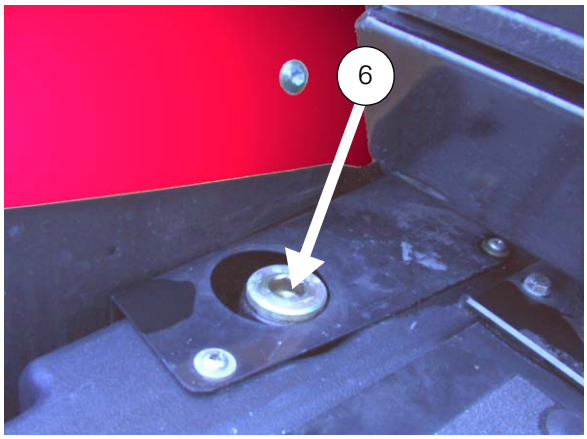
• Unscrew the drain plug (Ref. 4 and 5,Fig. 36).



Z3A-764-07-04

Fig. 36

- Fill the tank via the filler cap (Ref. 6, Fig. 37).

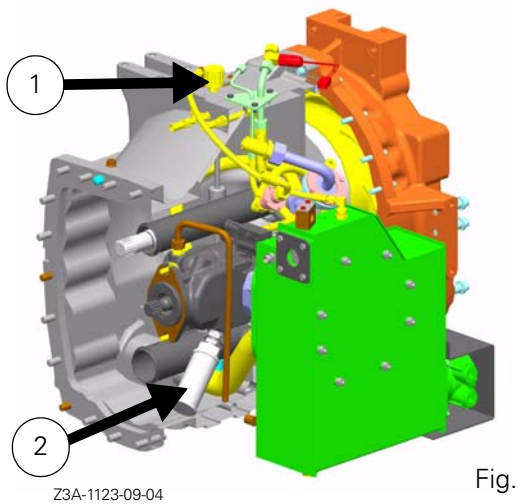


Z3A-730-07-04

Fig. 37

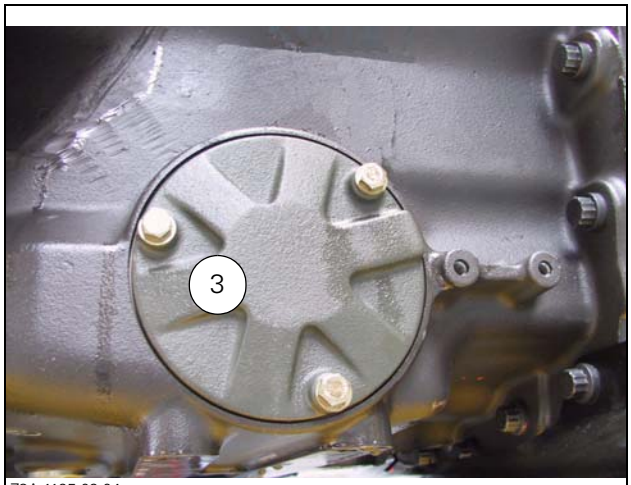
- Replace the breather plug every 400 hours (1. Fig. 38).
- If the hydraulic system is polluted, change the 300 micron steering suction strainer (2. Fig. 38) and the 300 micron LS pump suction strainer (3. Fig. 39).

NOTE: The tank must be disassembled for this latter operation (see your dealer or agent).



Z3A-1123-09-04

Fig. 38

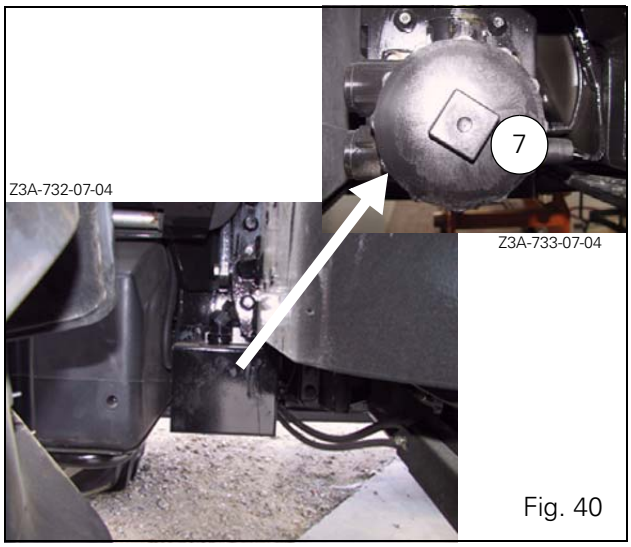


Z3A-1125-09-04

Fig. 39

5.11.2.2 - 10 micron return filter

Every 400 hours, replace the return filter (Fig. 40) located on the auxiliary hydraulics tank.



Z3A-732-07-04

Z3A-733-07-04

Fig. 40

- Unscrew the filter (Ref. 7).
- Remove the filter element, allow to drain fully, and discard it.
- Slide the new filter element into the bowl.
- Screw the cap back, fitted with its seal (replace if necessary).

CAUTION: Check for the presence of the spring.

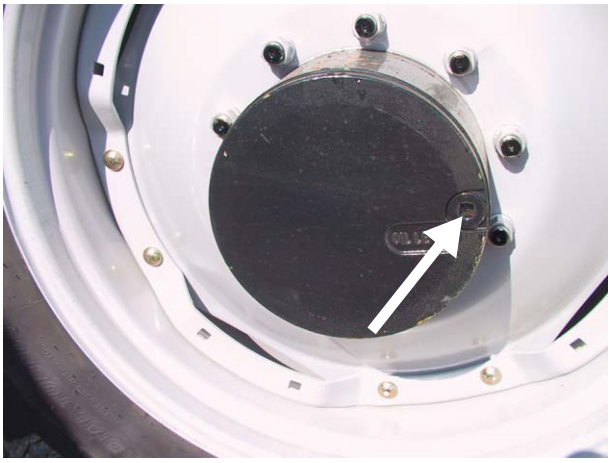
5.11.3 - Transmission oil cooler (according to version)

Clean the transmission cooler fins every 400 hours (variable frequency).

5.12 - FRONT AXLE - 4-WHEEL DRIVE

5.12.1 - Final drives

Check the oil level in the front axle final drives every 400 hours (Fig. 41).
The oil should be level with the filler plug when the plug is in the horizontal position.

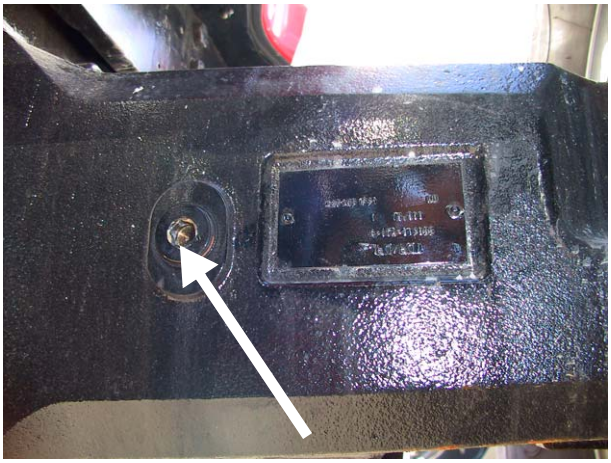


Z4A-1628-11-05 Fig. 41

Drain the oil from the final drives every 800 hours or every 400 hours when working in muddy or exceptionally humid conditions.
Turn the wheel to bring the plug to its lowest position.

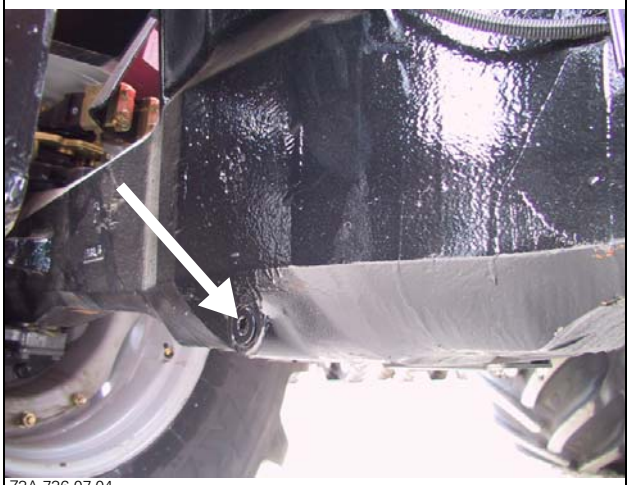
5.12.2 - Front axle

Check the front axle oil level every 400 hours. The oil should be level with the level plug (Fig. 42).

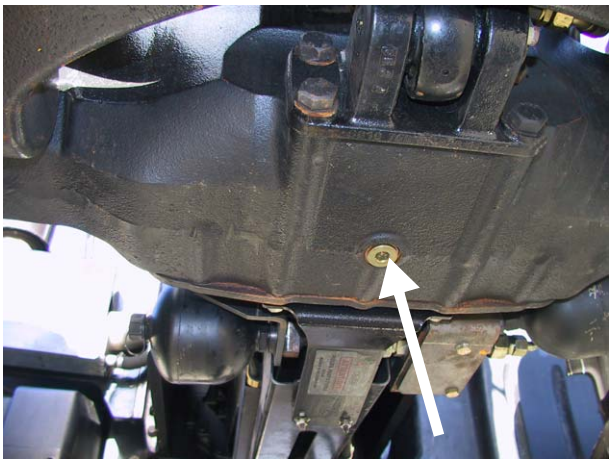


Z4A-1632-11-05 Fig. 42

Drain the front axle oil every 800 hours via the drain plug depending on model (not suspended, Fig. 43, suspended, Fig. 44).



Z3A-736-07-04 Fig. 43

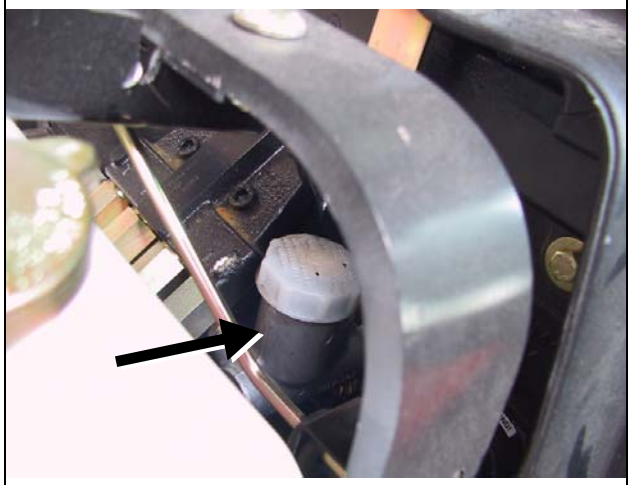


Z4A-1632-1105 Fig. 44

5.13 - CLUTCH AND BRAKES

5.13.1 - Clutch liquid level

Check the clutch liquid level (Fig. 45) at each overhaul. Drain the clutch circuit every 2000 hours.



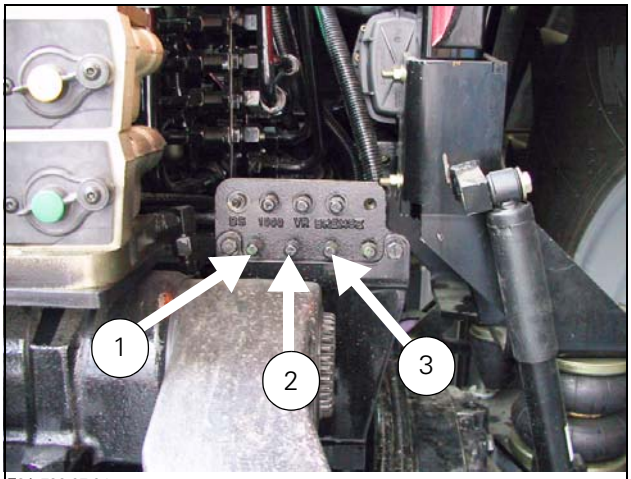
Z3A-765-07-04

Fig. 45

5.13.2 - Adjustments

The clutch and brakes are operated hydraulically and require no adjustment. If necessary, consult your dealer or agent.

Bleed the brake/piston circuit every 1200 hours and after every servicing operation.



Z3A-766-07-04

Fig. 46

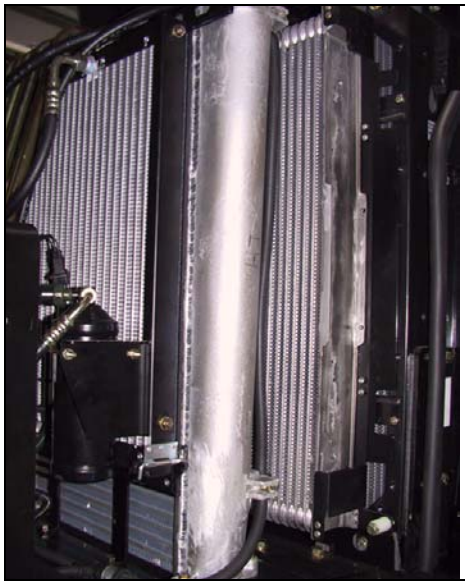
1. Bleeding the front brake,
2. Bleeding the left brake,
3. Bleeding the right brake.

5.14 - AIR-CONDITIONING

5.14.1 - Condenser

(Fig. 47)

Clean with compressed air.



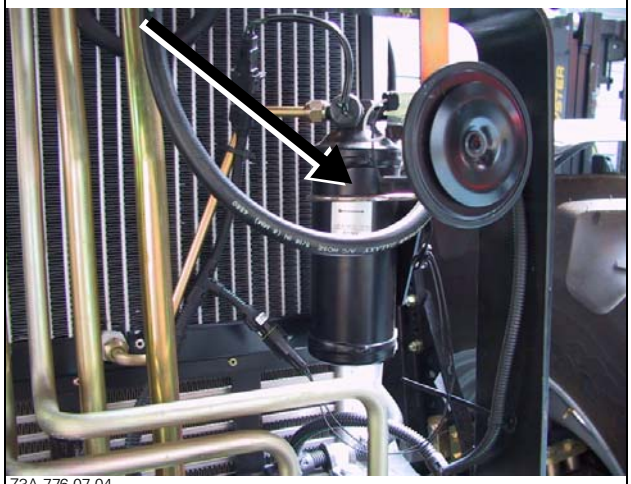
Z3A-737-07-04

Fig. 47

5.14.2 - Dryer

(Fig. 48)

Replace the air conditioning receiver drier every 1200 hours (consult your dealer).



Z3A-776-07-04

Fig. 48

5.14.3 - Checking the charge system

Run the engine and operate the air conditioning system for a few moments.

It is advisable to have your dealer or agent add charge to the system once a year at the start of the summer.

NOTE: So as to keep the system in good condition, it is advisable to operate the system for several minutes each week to lubricate all the seals.

The condenser and the oil cooler can be moved sideways or turned to make the cleaning of the radiator area easier.

DANGER: In the event of a leakage, wear safety goggles. Escaping refrigerant can cause severe injuries to the eyes. R134a refrigerant gives off a toxic gas if it comes into contact with a flame.

WARNING: Do not disconnect any part of the refrigeration circuit from the air conditioning system. Consult your dealer or agent if a fault occurs.

5.15 - CHECKING THE CONDITION OF THE FAN BELT

(Fig. 49)

Examine the fan belt (on a daily basis or whenever refuelling).

Cross cracks (running across the breadth of the belt) are allowed.

Longitudinal cracks (running along the length of the belt) which intersect cross cracks **are not allowed**.

Replace the belt if it is cracked in an unacceptable way, frayed or if pieces have come off.

5.15.1 - Check the belt tension every 400 hours

The correct deflection value is 15 to 20 mm (Sisu engines) when pressing the hand on the belt midway between the fan pulley and crankshaft pulley.

A new belt may loosen after operating for approximately half an hour or an hour.

5.15.2 - Replacing the Poly-V belt

Replace the belt as soon as it shows signs of wear or damage or is oily.

Loosen the alternator screws, remove the drive belt, assemble the new belt and tighten while manipulating the alternator so that the self-tensioning idler moves to form an angle of approximately 15° off vertical (see Fig. 49). Retighten the alternator, check belt tension and re-tighten if necessary.

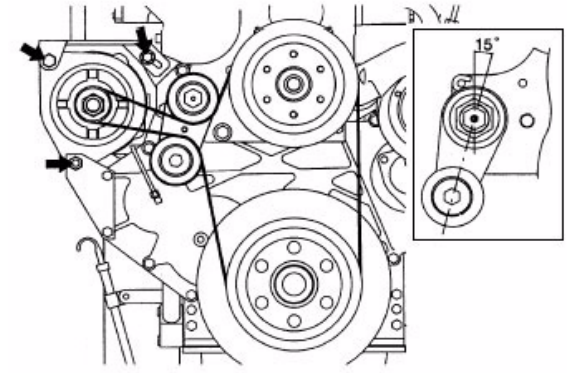
NOTE: After the tensioner has been slackened to remove/fit the belt, check the torque of the tensioner screws.

Torque value: 43 Nm [32 ft-lb]

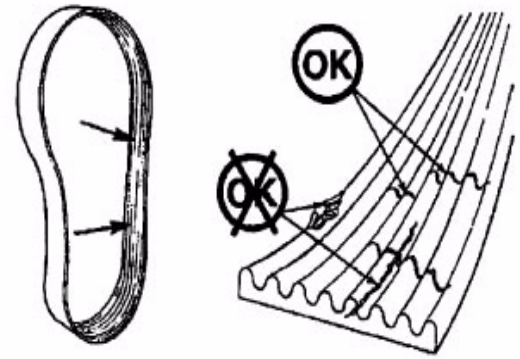
5.15.2.1 - Replacing the air-conditioning belt

Fig. 50: Replace the air-conditioning drive belt at the first signs of wear:

1. Loosen the lock screw (1) on the tensioner then the nut (3) and adjustment screw (2) to release the tension.
2. Replace the belt.
3. Hold the tensioner against the belt with your hand and pre-tighten the lock screw (1) to 5 Nm.
4. Bring the tension adjustment screw (2) against the tensioner and tighten for 2.5 turns.
5. Lock the lock nut (3).
6. Re-tighten the lock screw on the tensioner (1) to torque 67 Nm.
7. Use a frequency meter to check the tension (128 to 150 Hertz) (90 to 110 Nm (66.38 to 81.14 ft lb)).



Z2-507-05-03



Z2-508-05-03

Fig. 49

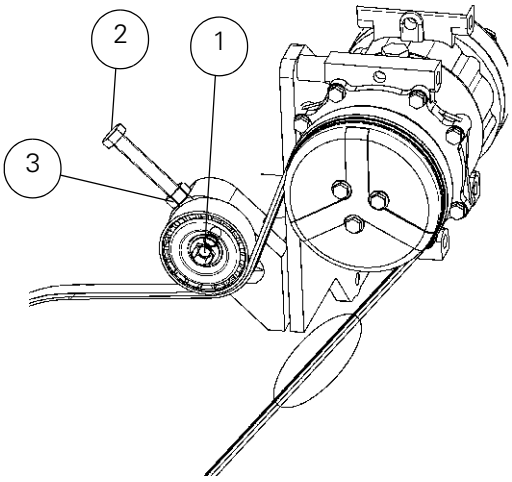


Fig. 50

5.16 - CAB

5.16.1 - Cab air filter

Clean the cab air filter every 400 hours, or more frequently, if necessary.

1. To gain access to the cab air filter, open the hatch on the left-hand side of the cab roof (Fig. 51).
2. Turn the handle and lift out the filter element.
3. Clean the filter by blowing it with compressed air.
4. Before refitting the filter, wipe out the compartment with a damp cloth to remove dust.

Change the cab filter every 1200 hours.

WARNING: The air filter element does not provide protection from chemical products. Please ask your AGCO dealer for information concerning the availability of the specific particle filter.

Fig. 51

5.16.2 - Cab suspension

Regularly (once a fortnight) drain the water from the air circuit of the pneumatic cab shock absorbers by pressing the valve (Fig. 52) located beneath the arch to the rear left of the cab.

Replace the condenser filters and compressor filters located beneath the cab every 4800 hours (consult your AGCO dealer for further advice).

Replace mechanical shock absorbers every 4800 hours (consult your AGCO dealer).

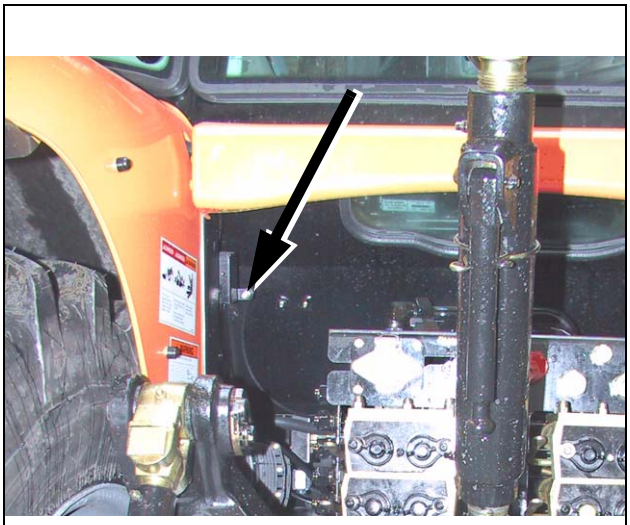


Fig. 52

5.16.3 - ROPS cab or frame

Have the tightness of the cab or frame mounting bolts checked by your dealer or agent every 400 hours.

CAUTION: The ROPS cab or frame complies with the various international safety standards. It must never be drilled or modified to enable installation of accessories or implements. Welding any item to the cab or frame or repairing the cab or frame is not permitted. If any such operation is carried out, the cab or frame may no longer comply with safety standards. The only components which can be fitted are AGCO original components, which must be fitted by your dealer or agent.

5.17 - TYRES

5.17.1 - Agricultural tyre markings

Fig. 53:

1. Flange size in inches
2. Type of manufacture (E.g.: Radial)
3. Nominal rim diameter in inches
4. Side/flange size ratio
5. Load capacity index per tyre 121 = 1450Kg (3196.7 lb); 153 = 3650Kg (8046.8 lb)
6. Speed symbol A8 = 40 Kph (24.85 mph)
7. Reference pressure: 1.6 bar (23.20 lbf/in²)
8. Tubeless: Without inner tube

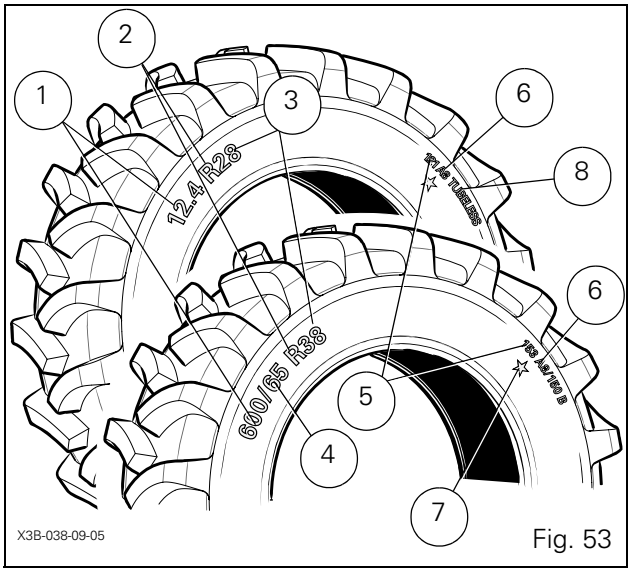


Fig. 53

5.18 - TYRES

5.18.1 - Dual rear wheels

In general, dual rear wheels should be used only for reducing soil compaction (surface treatment work). The following four criteria must be respected when selecting the correct dual rear wheels:

1. Soil conditions.
2. Traction (narrow wheels).
3. Overall dimensions (2 m 50 for road gauge).
4. Type of tyre.

CAUTION: The wrong choice of dual wheels has a direct influence on the mechanical components and the wheel rims of the tractor. Avoid using dual wheels for intensive pulling, even for short periods (hauling out a tractor stuck in the mud etc.).

5.18.2 - Operation

Set the inner wheels to minimum track (Fig. 54).

The use of very wide tyres on dual wheels is not recommended.

The most efficient dual wheels arrangement uses two tyres of the same specifications.

1. When fitting dual wheels with tyres of different widths, the wider wheel must be fitted inside.
   When fitting dual wheels with tyres of the same width, the tyre which is more worn must be fitted on the outside.
2. It is preferable to use wide tyres or low pressure tyres instead of twin wheels.

NOTE: Dual wheels do not double the load capacity of the tractor.

The minimum distance allowed between the tyres is 100 mm (A Fig. 54).

In clay soil, this distance should be increased in proportion to the tyre size. Example:

13.6-28 - Distance 130 mm

16.9-38 - Distance 160 mm

20.8.42 - Distance 200 mm

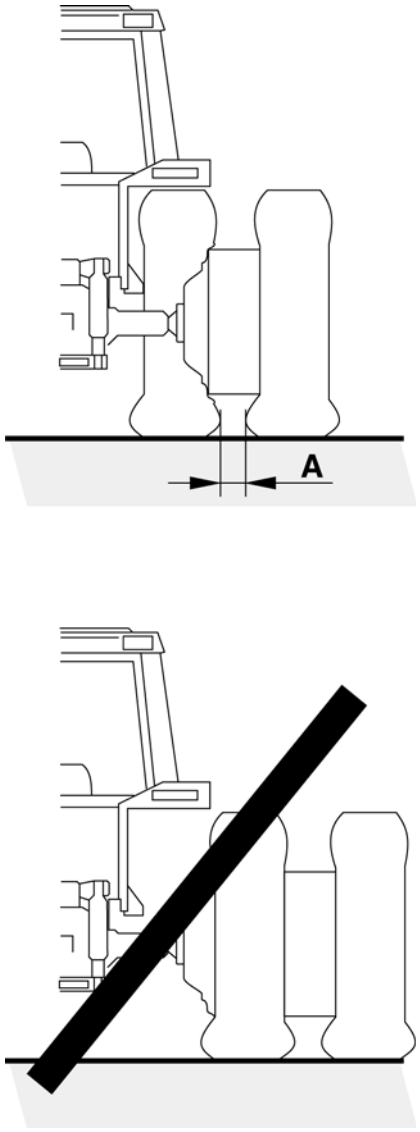


Fig. 54

5.18.3 - Wheel studs

Check the tightening torque after the first two hours of use following fitting and every day thereafter.

Liquid ballasting

Steering and braking performance can be considerably affected by attaching implements. To maintain the required ground contact pressure, ensure that the tractor is ballasted correctly. Advice is available from your local AGCO Dealer.

- Tyres with inner tubes:

CAUTION: When preparing a calcium chloride solution for ballasting the tractor tyres with water, NEVER pour the water onto the calcium chloride as this may produce chlorine, which is a toxic and explosive gas. This can be avoided by slowly adding calcium chloride flakes to the water and stirring until they are dissolved.

- Tubeless tyres:
  Use a monoethylene glycol-based liquid containing corrosion inhibiting agents other than nitrites (Na No_2). Example: Agrilest, Castrol, Lestagel, Igol etc.

5.18.4 - Tyre pressure

0.2 bar less on the outer tyres.

5.18.5 - Ballasting the tractor

Fig. 55: Under certain conditions the tractor may need ballasting to increase the traction power of the drawbar and reduce excessive wheelslip. This additional weight can be obtained by adding a calcium chloride solution to the tyres, fitting cast iron counter-weights to the wheels or a removable front ballasting weight. The weight required depends on the condition of the ground and the work to be undertaken.

The optimum load is generally set at 60 kg/ PTO hp, but the total tractor weight can be increased to a maximum of 72.5 kg/PTO hp. Your dealer will inform you of the ballasting specifications of your tractor in order to optimise performance. If the ballasting is excessive, the tyres will leave visible tread marks (1). If the ballasting is insufficient, the tyres will leave blurred marks (3) due to wheelslip. Tractors with front axles operate most effectively when wheelslip is between 8% and 12%.

Ensure the tractor ballasting does not exceed the level required for adequate traction. The total load on each wheel must not exceed the load levels advised by tyre manufacturers and indicated on the tyres.

It is also recommended to take off additional weights for work requiring less traction, for example tilling, planting etc. Extra weight increases soil compression, uses more fuel and decreases the life span of tyres, bearings, gearings, etc.

When a weight is added to the rear wheels, the tractive draft increases and tends to reduce the weight of the front wheels.

WARNING: Ensure that the tractor always has sufficient weight at the front to remain stable and keep control of the steering.

The ideal ballast distribution on tractors with front axles is 40% at the front and 60% at the rear.

If there is a power/wheel hop deviation on tractors with front axles, use the following procedure, carrying out a field test after each stage:

1. Distribute the ballast as required (40% to front, 60% to rear).
2. Adjust the total tractor weight, maintaining the 40/60 distribution, until the wheels leave marks similar to those in diagram 2 of Fig. 55.
3. Gradually reduce the rear tyre inflation pressure by increments of 2 psi.
4. Gradually reduce the front tyre inflation pressure by increments of 2 psi.
5. Redistribute the ballast (35% to front and 65% to rear) by removing the tractor front weight.

NOTE: Ballast should not be added to the rear axle when redistributing the weight unless all additional weights have been removed from the front axle.

6. Check the tyre drag percentage in this paragraph.
7. Consult your dealer.

5.18.6 - Using the front loader

Comply with the following instructions when using a front loader.

1. Take the front weight off 4WD tractors, including the liquid ballast in the front tyres.
2. Set the front wheel track to the widest track allowed by the width of the bucket.

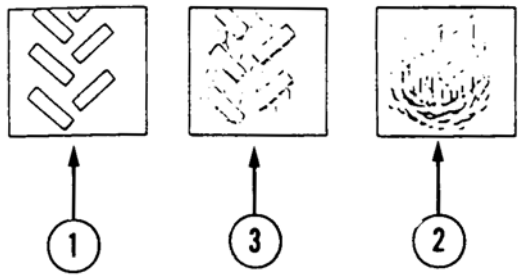


Fig. 55

5.19 - TABLE OF RADIAL LOADS AND STANDARD INFLATION PRESSURES

Maximum loads for tyres at various cold weather inflation pressures											
Tyre dimension	**psi KPa**	**12 80**	**14 100**	**16 110**	**18 120**	**20 140**	**22 150**	**23 160**	**26 180**	**28 190**	**30 210**
	PR symbol				*			**			***
14.9R28	lbs Kg	2630 1195	2880 1305	3120 1415	3300 1500	3560 1615	3760 1705	3960 1800	4140 1880	4320 1960	4540 2060
14.9R30	lbs Kg	2720 1235	2970 1345	3220 1460	3420 1550	3660 1660	3880 1760	4080 1850	4280 1940	4460 2025	4680 2120
14.9R46	lbs Kg	3420 1150	3740 1700	3960 1800	4300 1950	4540 2060	4800 2180	5080 2300	5360 2430	5580 2500	584 2650
16.9R28	lbs Kg	3200 1450	3500 1590	3780 1715	4080 1850	4320 1960	4560 2070	4940 2240	5020 2275	5240 2375	5520 2500
18.4R38	lbs Kg	4440 2015	4860 2205	5260 2385	5680 2575	5980 2715	6350 2880	6600 3000	7000 3175	7300 3310	7600 3450

** Consult the tyre manufacturer for loads under 12 psi (80 kPa) pressure.*

1. The figures in bold represent the maximum load for the symbol indicated (*, **, ***).
2. For transporting purposes, the tyre inflation pressure can be increased by 30 psi (210 KPa) (consult the tyre manufacturer for this minimum transport pressure). This increased inflation pressure must be decreased to the nominal value before the tractor is removed from the transport vehicle.
3. For dual wheels, the loads to the tyres must be reduced. Multiply the figures in the above table by 88.
4. For the above tyres, which are intended for a cyclic load without long periods of use at high torque nor at speeds exceeding 8 kph, the above values can be increased by 70% (inflation pressure is increased by 40 KPa (6psi)).
5. For FIELD WORK at high torque (ploughing for example), the basic loads can be increased by 7% PROVIDED THAT THE TRACTOR TRANSPORT SPEED IS LESS THAN 32 kph.
6. For transport purposes and during operations that do not require long periods of high torque, the following load limits at variable speeds must be applied with no modification to the inflation pressure.

IMPORTANT: Because the size relationship between the front and rear tyres is very important on 4WD tractors, only compatible sizes should be used - see Section 6.15 Tyres.

MAXIMUM SPEED	% DIFFERENCE IN RELATION TO ABOVE VALUES
16 kph	+34%
24 kph	+11%
32 kph	+7%
40 kph	NONE

CODE	TYRE TYPE
R-1	Drive wheel, standard type tyre tread.
R-2	Plantations (Sugar cane and rice), drive wheel, deep tyre tread.
R-3	Drive wheel, shallow tyre tread.
R-4	Industrial type tractor, drive wheel, intermediate tyre tread.

5.20 - WHEELS

Check wheel nuts for tightness every day. Tighten all wheel nuts until the torque (dry nuts) is the same as that specified (see Specifications).

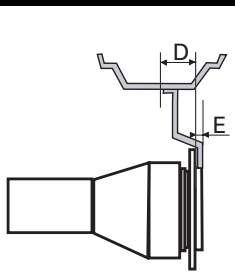
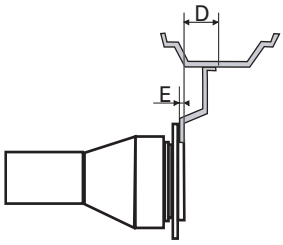
5.21 - ADJUSTING WHEEL TRACK

5.21.1 - Front track

5.21.1.1 - 4-wheel drive

The track widths available depend on the type of axle and the tyre dimensions.

TABLE OF FRONT WHEEL VALUES in mm

Transmission type - front axle				
		D = wheel offset 75 mm - **E** = wheel disc thickness 12 mm.		
		Inter-flange	**Disc facing inwards**	**Disc facing outwards**
MT635B/60	750/601	1892	1842	1996
MT655B/80	760/601	1892	1692	2116

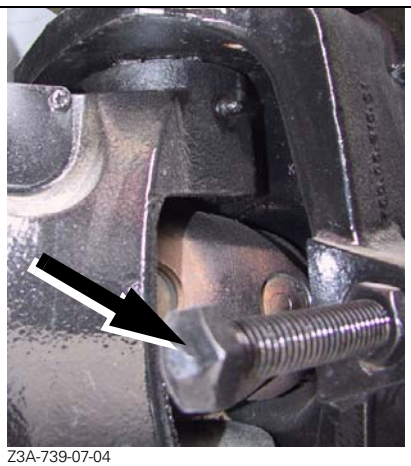
NOTE: If the wheels are reversed, they must be transferred to the opposite side of the tractor.

When refitting, tighten the nuts progressively to the correct torques. See tightening torque table (chapter 6).

NOTE: With narrow track widths and with certain tyre fittings, the wheels may touch the bonnet when turning at maximum lock.

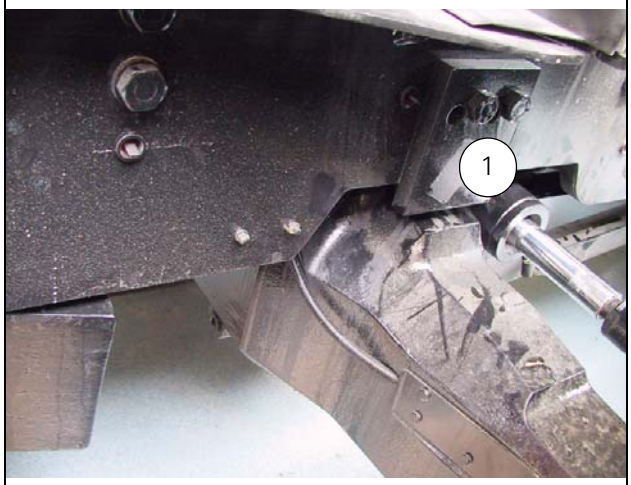
To prevent this, the hubs are fitted with threaded stops (Fig. 56) which can be adjusted to limit the turning lock. It is advisable to set maximum front axle oscillation by changing stop 1 (Fig. 57). If you change stop, use securing bolt provided in the tool box.

NOTE: The axle as fitted in the factory is designed to be able to withstand tractor transport.



Z3A-739-07-04

Fig. 56



Z3A-757-07-04

Fig. 57

5.21.1.2 - Adjusting the stops on the front axle

Adjust the turning lock stops by tightening or loosening the screws (2) and locking down the lock nut (3) (Fig. 58).

NOTE: The front axles are intended for a turning lock of 55°. The length (A Fig. 58) of the screw (2) between the base of the head and the swivel housing should be approx. 90 mm (Model 760/601) and approx. 45mm (Model 750/601).

Turn the swivel housing (6) to position the previously adjusted stop in order to limit the turning lock. Then, loosen the nut (4) and adjust the screw (5) on the opposite swivel housing and opposite side so the play of the travel limit stop is 0.3 to 0.5 mm (Fig. 59and Fig. 60).

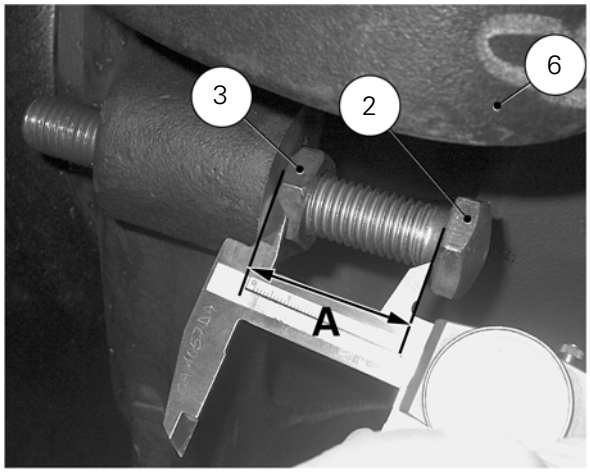


Fig. 58

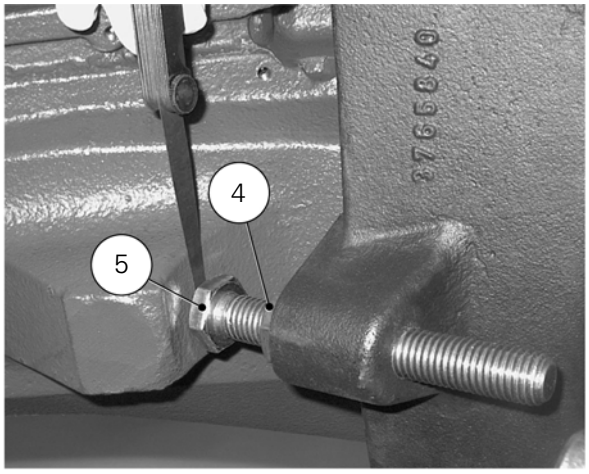


Fig. 59

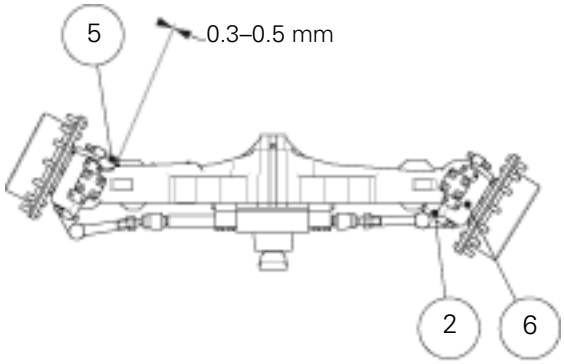


Fig. 60

5.21.1.3 - Toe-in check:

Toe-in check requires specific tooling; in case of problem, please consult your dealer.

5.21.2 - Rear track (mm)

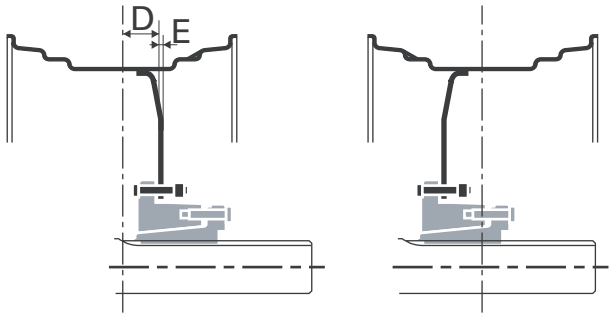
Wheels with steel flanges

The various track settings are obtained by changing the position of the rim in relation to the disc or by reversing the wheels.

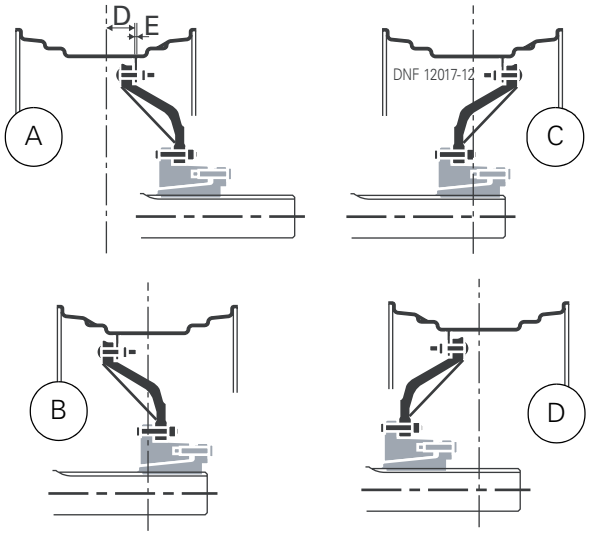
NOTE: Ensure a sufficient gap remains between the tyres and the inside of the fenders.

If the wheels are reversed, they must be transferred to the opposite side of the tractor.

When refitting, tighten the nuts progressively to the correct torques. See tightening torque table (chapter 6).

TABLE OF REAR WHEEL TRACK VALUES in mm			
Rear Axle			
		D = rim offset 75 mm - **E** = rim disc thickness 15 mm	
		Disc facing inwards (min. - max.)	**Disc facing outwards (min. – max.)**
MT635B to MT665B	HA 200/260 (Short straight shaft)	1699 - 1996	2029 - 2326

Wheels with cast iron disc

TABLE OF REAR WHEEL TRACK VALUES in mm			
Rear Axle			
		D = rim offset 75 mm - **E** = rim disc thickness 15 mm	
		Disc facing inwards (min. - max.)	**Disc facing outwards (min. – max.)**
MT635B to MT665B	HA 200/260	A - 1485 - 1781	A - 1815 - 2111
MT635B to MT665B	HA 200/260	B - 1959 - 2256	D - 2289 - 2586

5.21.3 - Changing wheel positions

Adjustment of wheel position on the shaft (half conical hub) (Fig. 61)

- Raise the rear of the tractor to lift the wheels from the ground and carefully shim the vehicle.
- Loosen the screws (1) of the half conical hubs by approximately three turns.
- Remove the 4 screws (2) and fit into the holes (3).
- Tighten them alternately until the half conical hubs are free of the fixed hub.
- Refit the 6 screws (3) in their original holes and retighten, taking care to align the two half cones.
- Tighten the screws alternately to the correct torque on each half cone (Fig. 61).

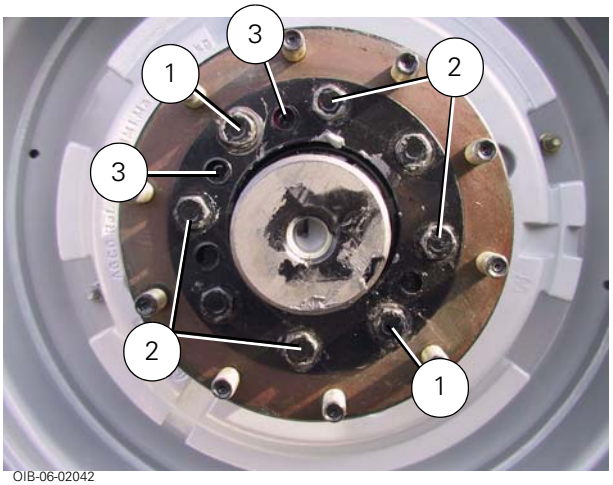


Fig. 61

5.22 - ELECTRICAL EQUIPMENT

The 12-volt circuit is a negative ground system.

5.22.1 - Batteries

Wipe the battery top and coat the terminals with liquid paraffin every 400 hours.

WARNING: Batteries produce explosive gases. Sparks, flames, lit cigarettes or any flammable source must be kept at a distance. Wear suitable safety goggles when working near batteries.

5.22.2 - Alternator

Check the tension of the fan and alternator belts every 400 hours.

Retighten the nuts.

Ask your dealer or agent to check the alternator every 1200 hours or once a year.

IMPORTANT: The alternator wiring must be disconnected before any arc welding on the tractor or on a hitched implement. Do not disconnect or reconnect the battery cables when the engine is running. Never operate the engine when the cable linking the alternator and battery is disconnected. Do not attempt to connect any additional electrical equipment, as this may damage components of the existing electrical system.

5.22.3 - Start-up assistance

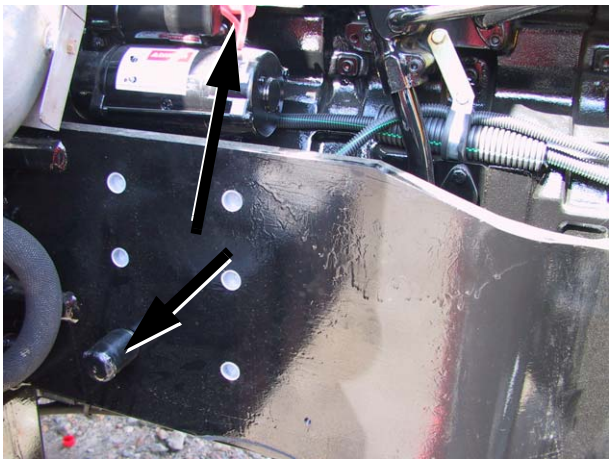


Fig. 62

A positive terminal (+) on the starter is provided to connect an emergency battery if a tractor battery fails.

DANGER: Start the engine only when sitting in the operator seat.

Operation:

1. Connect the positive end (+) of the emergency battery to the terminal located on the starter (Fig. 62).
2. Connect the negative end (-) of the emergency battery to the tractor ground.
3. Start the engine from the operator seat following the starting instructions.
4. When the engine is running, disconnect the wires from the emergency battery in the reverse order of connecting them.

WARNING: The emergency battery voltage should be identical to that of the original batteries.

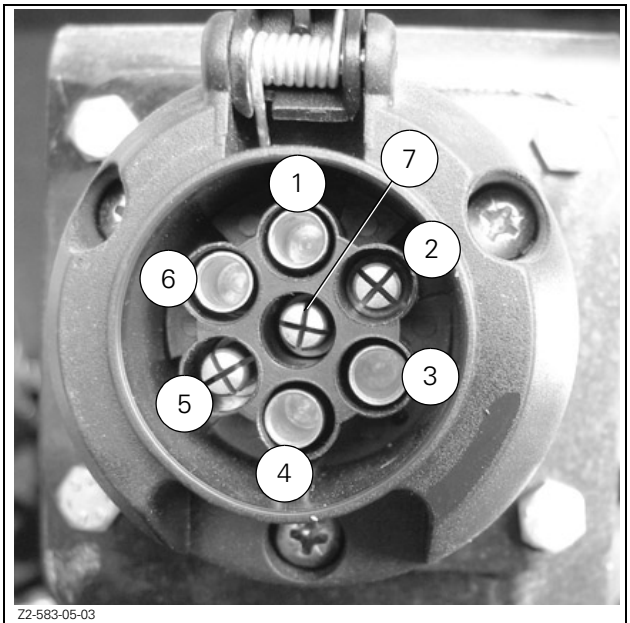
5.22.4 - Datatronic 3 clock

The Datatronic 3 can store memorised hourly data for a maximum of two weeks. If the battery goes flat or is disconnected for more than this period, the clock will need to be reset.

5.22.5 - Power socket (ISO)

Connection (Fig. 63).

1. Left-hand direction indicator
2. Reversing light
3. Ground
4. Right-hand direction indicator
5. RH side light
6. Stop
7. LH side light



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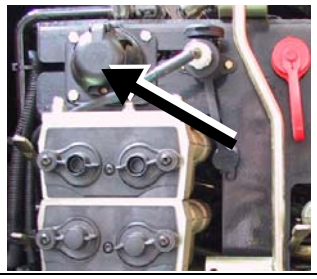


Z3A-768-07-04

Fig. 63

5.22.6 - Adjusting the headlights

The headlights are adjusted by tightening or loosening the three screws as required.

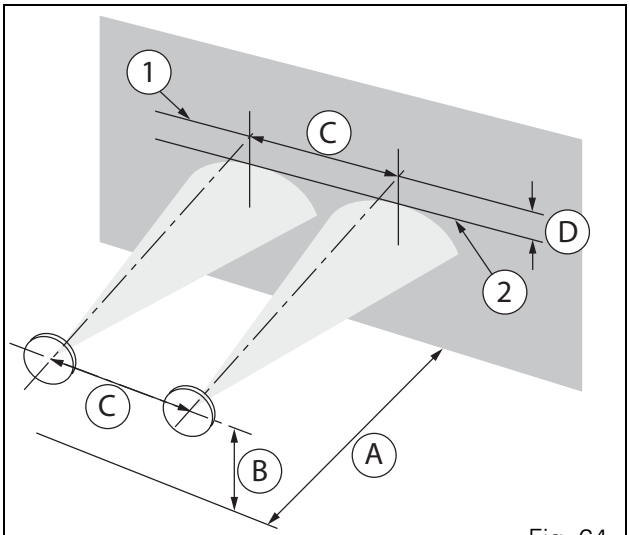
NOTE: Do not let your fingers come into direct contact with the iodine bulbs.

Key (Fig. 64)

A. Distance between the headlights and a wall or a screen
B. Height from the centre of the headlights to the ground
C. Distance between centres of headlights
D. Height after adjustment

5.22.6.1 - Headlight adjustment procedure

1. Position the tractor on a level surface, facing a wall or screen at a distance of 7.5 m.
2. Trace a horizontal line (1) on the wall, corresponding to height (B).
3. Trace two vertical lines on the wall corresponding to width (C).
4. Draw a horizontal line (2) corresponding to D = (B x 0.1). Adjust each headlight individually by masking the opposite light and aligning the upper edge of the lighted zone with the top of line 2.



Z3B-111-01-05

Fig. 64

5.22.7 - Xenon work lights (optional)

Certain precautions must be taken when replacing bulbs on models equipped with this option.

WARNING: The electrical connection between headlamp and lamp ballast is under HIGH VOLTAGE and must not be disconnected. Before replacing the xenon bulb, always switch headlights off and disconnect from the power supply.

Never insert foreign objects or fingers into the bulb holder.

- The light ballast is to be attached next to the headlight. Install the headlight and light ballast in a way that excludes a negative effect on the engine cooling system.

- Make sure not to twist the power supply cable between headlight and light ballast by more than 90° and/or bend it by radius smaller than 20 mm (0.8 in).

5.22.7.1 - Adjusting work lights

The work lights are adjusted by screwing the 2 screws in or out as required.

Z3A-1518-11-04

Fig. 65

5.22.8 - Battery circuit breaker

(Available as an option)

This safety device is designed to cut the power off from the battery in an emergency or during extended storage.

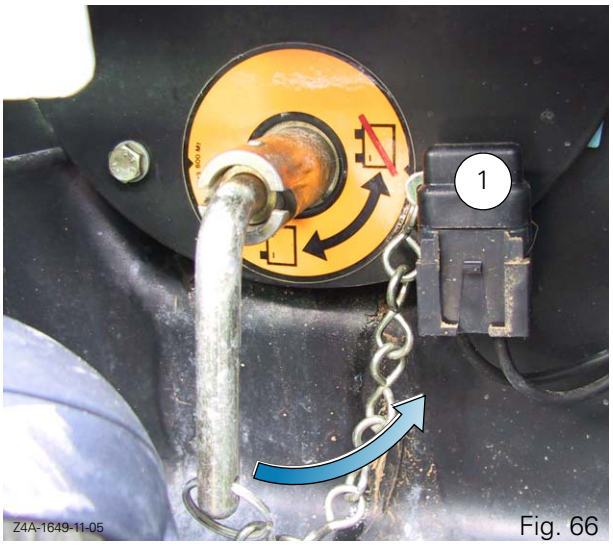
In an emergency:

To cut the power off, **turn the handle** on the battery circuit breaker (Fig. 66) **to OFF** (anti-clockwise) (Fig. 67).

Extended storage:

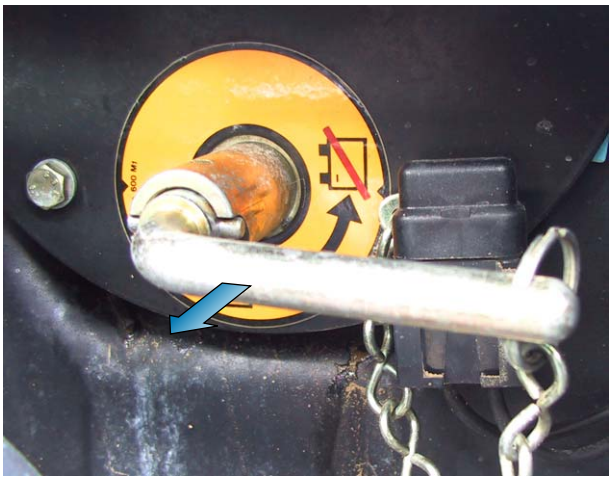
If the tractor must remain out of service for an extended period, it is advisable to cut off the circuit to prevent the batteries going flat.

In order to do so, turn the handle anti-clockwise and pull it towards you to remove it from its housing and withdraw the fuse (1 Fig. 66).



Z4A-1649-11-05

Fig. 66



Z4A-1650-11-05

Fig. 67

NOTE: The 3A fuse near the battery cut-off switch protects the radio and headlight module (Fig. 66)

To replace this fuse, you must:

- remove the fuse cover (1 Fig. 66) which gives access to the fuse,

IMPORTANT: replace the fuse with another fuse of the same capacity.

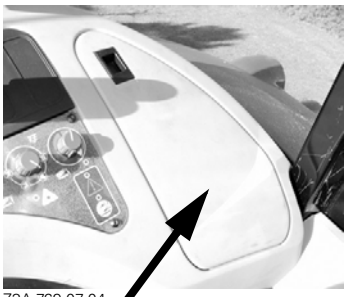
- carry out the same operations in reverse order to reassemble.

IMPORTANT: Before turning the ignition key, make sure the circuit breaker is closed (Fig. 66), otherwise the 3A fuse may well fuse itself.

5.23 - REPLACING FUSES

(version Techstar CVT Europe)

Always replace a fuse with another fuse of the same capacity.



Z3A-769-07-04

Fig. 68

N°	Amp	Operation
F1	10	Front right and rear left side light, back lighting switches/console/cigarette lighter
F4	10	Instrument panel, gearbox/differential/4WD/cab PTO/ creeper neutral switches
F5	15	Brake lights
F6	10	Techstar CVT actuator
F7	5	Electronic injection control module (ECM), reversing light relay
F9	15	Suspended front axle (Optional)/front PTO (optional)
F10	25	Front work lights on grille
F11	10	Air-conditioning compressor
F12	5	Auto IV Calculator
F13	7.5	Work lights module
F14	7.5	Electric rear-view mirror (optional)
F16	30	Fuel injection pump solenoid valve (EEM)
F17	3	Brake switch
F18	7.5	Linkage/Diagnostic
F19	25	Pneumatic seat, fuel preheater
F21	7.5	Linkage
F22	10	Start switch, BOC/TOC pedal switch, shuttle lever on steering wheel, throttle pedal position sensor, power take-off switch back lighting, armrest, ParkLock switch.
F23	30	Cigarette lighter
F25	25	Hazard warning light switch, permanent 12 volts
F26	30	Power socket
F28	20	Electronic injection control module (ECM)
F30	15	Electronic injection control module (ECM), thermostart
F31	15	ECM (Sisu)
F32	10	Electronic injection control module (ECM)
F34	15	Dipped lights
F35	7.5	Buzzer
F36	15	Headlights
F37	5	Clutch safety start switch
F38	7.5	Front left and rear right side lights, instrument panel back lighting
F39	20	Side light switch/rail road lights
F40	15	Left-hand direction indicator
F41	15	Control button on Joystick (Optional)
F42	5	ECM (Sisu)
F44	15	Right-hand direction indicator
F46	15	Rear window wiper
F47	10	Radio
F48	7.5	Suspended front axle (optional)
F49	50	Cab suspension (optional)
F50	50	Air conditioning, radio
F51	15	Dashboard
F52	10	Power socket
F53	25	Front windscreen wiper
F54	30	Front work lights
F55	25	Rear work lights
F56	25	Work lights on handrails and/or rear fenders
F57	30	Work lights on handrails and/or footstep
F58	7.5	Work lights module
F59	10	Flashing beacon (optional)
F60	10	Relay control + ignition on
F61	25	Hazard warning lights
F62	40	Auto IV Calculator

N°	Amp	Operation
SH2	30	Handrail work lights
SH4	15	Without handrail road lights
SH5	10	Without handrail road lights
SH7	15	Direction indicators
SH9	15	Direction indicators
SH11	15	Direction indicators
SH13	15	Direction indicators
SH14	15	Direction indicators
R1		Handrail road lights (A)
R2		ECM fuel lift pump (Sisu)
R3		Electronic injection control module (ECM)
R4		Reversing lights (optional)
R5		Brake lights
R6		Control button on Joystick (optional)
R7		Control button on Joystick (optional)
R8		Handrail road lights
R10		Power socket
R11		Techstar CVT
R12		Windscreen wiper timer
R14		Air conditioning, radio
R15		+ ignition on
R16		Cab suspension (optional)
R17		Front work lights
R18		Rear work lights
R19		Work lights on handrails and/or rear fenders
R20		Footstep work lights
R21		Left-hand direction indicator
R24		Right-hand direction indicator
R27		Flashing beacon (optional)
R28		Hazard warning light unit
R29		Manual air conditioning
R31		Front work lights on grille

A 225A fuse, located near the starter (in a sheath), protects the power supply.

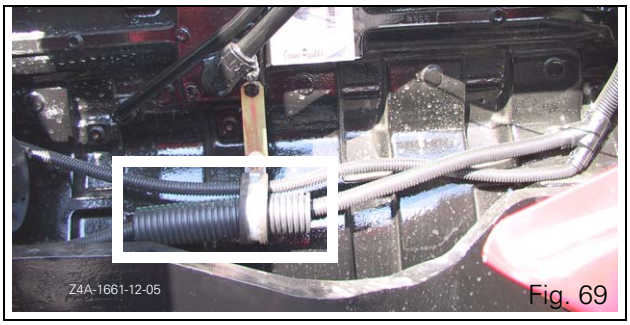


Fig. 69

A 150A fuse, located near the starter, protects the cab power supply.

Circuit breaker option: A 3A fuse near the battery cut-off switch supplies the headlight module and radio.

5.24 - FUEL HANDLING, STORAGE AND SPECIFICATIONS

5.24.1 - Diesel

Before handling fuel, filling the tank etc., observe the following:

Under no circumstances should petrol, alcohol, gasohol or dieselhol (a mixture of diesel fuel and alcohol) be added to diesel fuel because of increased fire or explosion risks. In a closed container such as a fuel tank, these mixtures are more explosive than pure petrol. DO NOT use these blends. Additionally, dieselhol is not approved due to possible inadequate lubrication of the fuel injection system. Clean the filler plug area. Fill the fuel tank at the end of each working day to reduce overnight condensation.

- Never take the cap off or refuel when the engine is running or hot.
- When filling the tank, keep control of the nozzle.
- DO NOT smoke.
- Do not fill the tank to its full capacity. Allow room for expansion and wipe up spilt fuel immediately.
- If the original cap is lost, replace it with an AGCO cap and tighten securely. A non-AGCO cap does not guarantee safety.
- Ensure equipment is properly maintained.

CAUTION: Diesel fuel is flammable. Handle fuel with care. Keep away from naked flames. Do not smoke when filling the storage tank or vehicle tank. Do not leave the tractor when filling the tank. Clean up any spilt fuel after filling the tank. Any material which comes into contact with the fuel must be moved to a safe place.

If high-pressure fuel comes into contact with the skin, wash immediately with clean water and seek medical help.

5.24.1.1 - Recommended fuel specification

The diesel fuel used must comply with the DIN EN 590 standard. To ensure the correct power and performance from your engine, use good quality fuel. The recommended fuel specifications for engines are indicated below:

- Cetane index minimum 45.
- Viscosity 2.0… 4.5 mm²/s at 40°C.
- Density 0.820/0.860 kg/litre at 15°C.
- Sulphur 0.20% of mass, maximum.
- Distillation 85% at 350°C.
- Water content maximum 200 mg/kg.

Cetane index

The cetane index indicates ignition performance. A fuel with a low cetane number can cause cold start-up problems and affect combustion.

Viscosity

Viscosity is the flow resistance; engine performance can be affected if it is outside the specified limits.

Density

A lower density reduces engine power, while a higher density increases engine power and exhaust smoke.

Sulphur

A high amount of sulphur can cause engine wear.

Distillation

Distillation is an indication of the mixture of different hydrocarbons in the fuel. A high ratio of lightweight hydrocarbons can affect the combustion characteristics.

Low temperature fuel

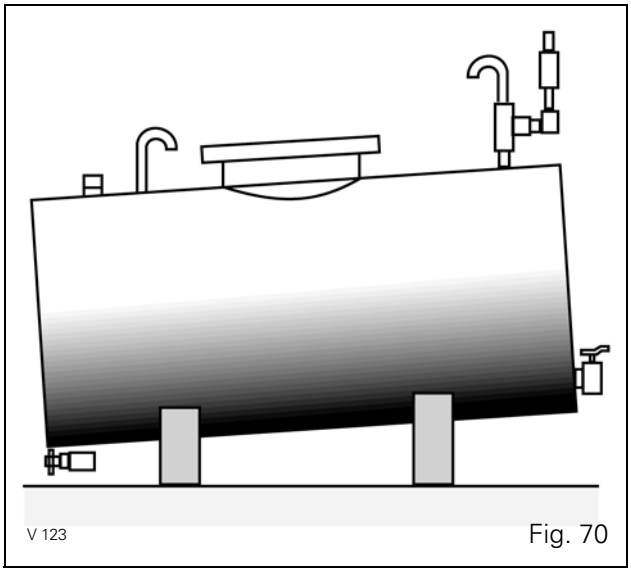
Special winter fuels allow the engine to run at sub-zero temperatures. These fuels have the lowest viscosity and restrict the formation of wax (crystallisation) in the fuel at very low temperatures. If wax formation occurs, this could stop the fuel flow through the filter. If you need advice on engine adjustments or oil change frequency due to the quality of the available fuel, consult your nearest AGCO dealer.

5.24.2 - Fuel storage

(Fig. 70)

The utmost care must be taken to keep fuel clean.

1. Never clean the inside of containers or other fuel system components with a fluffy cloth.
2. Bulk storage tanks should not be overfilled: approximately 10,000 litres.
3. The storage tank should be under cover and supported on a cradle high enough for the tractor fuel tank to be filled by gravity. It should have a suitable manhole to provide access for cleaning. The outlet tap should be about 75 mm above the bottom of the tank to allow water and sludge to settle. It should have a removable strainer. The storage tank should have slope of about 4 cm per metre towards the rear (drain plug side).
4. Let the fuel settle in the storage tank for 24 hours before use after any servicing or refilling the tank.
5. Clean out the storage tanks regularly; normally every five years, more frequently in cold climates.
6. Bleed the tank frequently to drain off any water formed by condensation.
7. Rotate fuel stocks to prevent deterioration of old fuel and the accumulation of water or foreign matter.
8. Bring in fresh supplies without waiting for stocks to run out; refuelling from the bottom of the tank may cause a blockage.



V 123 Fig. 70

Advice on the use of fuel in cold weather

1. In cold weather, diesel fuel increases in viscosity and wax particles form. This may lead to operating problems if precautions are not taken.
2. Underground storage is preferable.

IMPORTANT: Environmental protection - you must comply with local regulations in force relating to underground storage.

   If this is not possible, place the storage tank or drum in a location which is protected from the cold, wind or damp.
3. After filling the storage tank, drain the first 5 litres into a drum before filling the fuel tank. Then return the fuel in the drum to the storage tank.
4. Insulate all exposed pipework. Ensure that any pipework is short in length and designed to be disassembled if necessary.
5. Stock only "winter" quality fuel during the cold weather season.

Clean the fuel filter sediment bowl frequently.

Do not puncture the fuel filter.

Ensure a spare filter is always available. If a blockage occurs, due to fuel waxing, changing the fuel filter will enable restarting.

5.25 - STORING THE TRACTOR

If a tractor is not going to be used for a long time, certain precautions must be taken to protect it. Consult your dealer or agent for further information.

Chapter 6

SPECIFICATIONS

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6.1 - ENGINE

Characteristics	MT635B	MT645B	MT655B	MT665B
Sisu type engine	74CTA		84CTA	
Number of cylinders	6		6	
Turbo-charging	Air/air		Air/air	
Bore (mm)	108	108	111	111
Stroke (mm)	134	134	145	145
Cubic capacity (l)	7.4	7.4	8.4	8.4
Nominal power at 2200 rpm *(SAE HP) (SAE kW)	226 (167)	241 (178.5)	266 (197)	292 (216)
Maximum power at 2000 rpm *(SAE HP) (SAE kW)	NC	NC	NC	NC
Maximum torque *(ISO Nm) Engine rpm at maximum torque	970 1500	1071 1500	1195 1500	1280 1500
Idling speed Max. speed at no load (rpm)	800 2250			
Lubrication	by gear pump - suction strainer and replaceable cartridge type filters			
Valves	Overhead, operated by valve lifters			
Valves clearance (cold): Inlet - mm Exhaust - mm	 0.35 0.35			
Engine oil cooler	yes			

*ISO 14396

6.1.1 - Fuel system and air filter

Characteristics	MT635B	MT645B	MT655B	MT665B
Fuel filter	yes			
Number of elements	1			
Fuel prefilter	yes			
Number of elements	1			
Injection pump	Bosh CP3.3			
Injectors and nozzle holders	Bosch			
Cold weather starting	Grid heater			
Air filter: two-stage, dry element with blockage indicator.				

6.2 - GROUND SPEEDS

6.2.1 - Ground speed with TECHstar CVT continuous transmission

Range		Forward	Reverse
Tortoise Field speeds	kph	0.02 - 32	0.02 - 20
Hare Road speeds	kph	0.02 - 50*	0.02 - 38

*NOTE: *Speed limits comply with legislation in force in the countries concerned. Speed is limited electronically.*

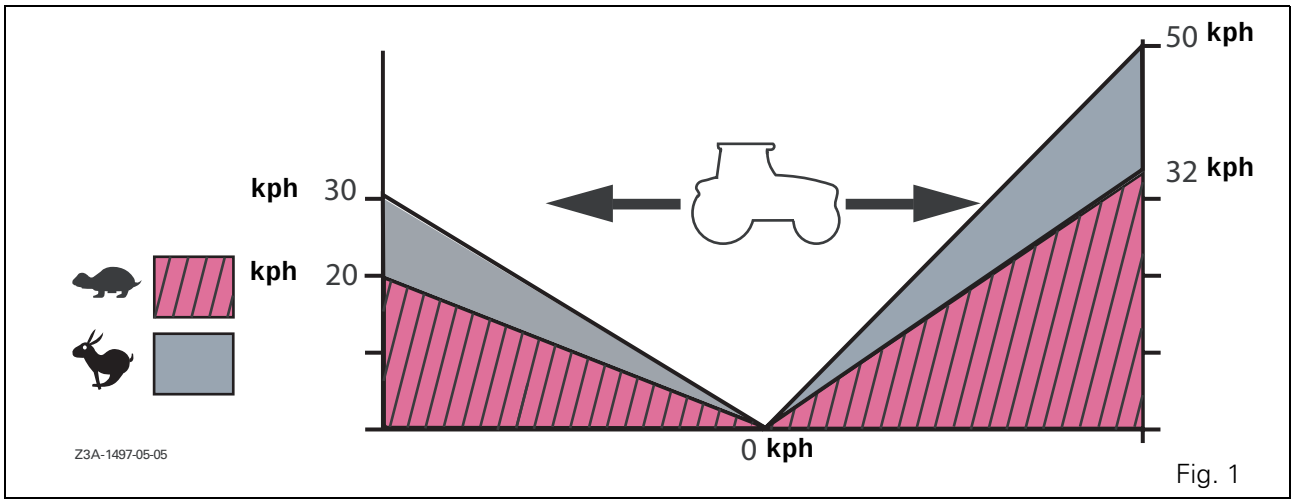


Fig. 1

6.3 - ELECTRICAL SYSTEM

Voltage:	12 volts. Negative earth.
Batteries:	2 maintenance free batteries.
Alternator:	150 A
Safe start-up:	Operated by the clutch pedal.
Headlights:	European code 60/55 W - H4
Side lights:	5 W
Indicators:	21 W
Number plate light:	10 W
Work lights:	55 W - H3 35 W (Xenon bulbs optional)
Instrument panel lighting and indicator lights:	3 W - 2 W - 1.2 W
Roof light:	10 W

6.4 - COOLING

Mode:	Centrifugal pump and pressurised radiator. Thermostat regulation. Opening temperature (start/full): 83°C/93°C (181.4/199.4°F). Thermostat control.
Fan:	Disengageable viscostatic or vistronic, depending on models. Fan driven water pump.
Belt:	Fan: Poly-V ribbed belt. Air-conditioning compressor: Poly-V ribbed belt.

6.5 - TRANSMISSION

- Techstar CVT transmission: - continuous speed variation of 0 to 50 kph in forward travel (according to country) and 0 to 30 kph in reverse.
- Filtration: - 150 micron suction strainer, located to the right of the centre housing.
  - External main high-pressure 10 micron filter, to the right of the centre housing.
- Bevel gear / differential reduction ratios: - MT635B and MT645B normal assembly (HA 200): 3.58
  - MT655B and MT665B normal assembly (HA 260): 3.81

6.6 - FINAL DRIVES

Drives:	Epicyclic, located in the rear axle housings.
Drive ratios:	MT635B and MT645B normal assembly (HA 200): 8.25 MT655B and MT665B normal assembly (HA 260): 9.2

6.7 - REAR POWER TAKE-OFF

Flanged shaft:	540/1000 rpm at 2000 engine rpm, (Ø35 mm 6 or 21 splines). 540/540E/1000 rpm at 2000 engine rpm, (Ø35 mm (6, 20 or 21 splines).
Control:	By switches located in the cab, with PTO brake. With or without PTO stop button on rear fenders.

6.8 - FOUR WHEEL DRIVE FRONT AXLE

Clutch mechanism:	Electrohydraulic, electrically actuated by push-button in the cab.
Differential lock:	Multidisc differential lock with electrohydraulic control.
Gear reduction ratios:	MT635B and MT645B: 750/601 (750/522): 15.75 MT655B and MT665B: 760/601 (760/521): 16.8

6.9 - HYDRAULICS (ACCORDING TO MODEL OR COUNTRY)

Closed centre hydraulic system with flow and pressure control

- **Primary circuit:** (flow rate 48 l/mn at 2200 rpm) supplies:
  steering, cooling system.
- **High pressure system** (max. flow rate 152 l/mn at 2200 rpm, max. pressure 200 bar) supplies:
  trailer brake, tractor braking valve, brake lock (ParkLock), auxiliary hydraulics, linkage.

Filtration:	a 300 micron suction strainer, located inside the centre housing. a 10 micron return filter, located in front of the hydraulic reservoir.

6.10 - LINKAGE

6.10.1 - Rear

Type: 3-point, category 3 or 3.2, with fixed or telescopic lower drawbars, hook or ball joint type.

Capacity (Kg).

CAPACITY	MT635B - MT645B - MT655B - MT665B
Rams	2 x Ø100
At ball joints*	10500

*Maximum capacity according to lift rod position and linkage type.

6.10.2 - Front

Type: 3 points with or without nitrogen balls.

Cylinders: 2 in number - Lifting force (kg) (see tables).

CAPACITY	MT635B - MT645B	MT655B - MT665B
At ball joints*	3500	5000

6.11 - BRAKES

Type: Multidisc, diameter 223 mm at rear and 170 mm at front, hydraulically operated.
Number of discs per side: 6.
Parking brake: activates the main brakes.
Trailer brake: According to version, via hydraulic valve.

6.12 - REAR DIFFERENTIAL LOCK

Type: Disc
Control: Hydraulic, electrically controlled

6.13 - STEERING

Type: Hydrostatic, tiltable and telescopic steering column, double-acting central cylinder.

Turning radius (hypothetical)	MT635B - MT645B	MT655B - MT665B
Front tyre dimensions	480-70 R30	600-70R28
Outer tyre radius* Without brake (m)	5.75	5.75

*with front axle disengaged

6.14 - WHEELS

FRONT	4-wheel drive steel rims
REAR	Manual adjustment steel rims Cast iron rims with automatic or manual adjustment

6.15 - TYRES

Compatibility of front/rear wheels (same make and model) on 4-wheel drive tractors.

Front	Rear	Front	Rear
600/65 R28	650/75 R38	540/65 R30	650/65 R42
600/65 R28	710/70 R38	710/55 R30	900/50 R42
600/70 R28	650/85 R38	380/85 R34	480/80 R46
420/85 R30	520/85 R42	480/70R34	520/85 R46
480/70 R30	620/70 R42	320/85 R38	320/90 R54

NOTE: The data in this table is not exhaustive. Ask your dealer for further information on other possible choices.

6.16 - TYRE PRESSURE

See chapter 5.

6.17 - WHEEL TRACKS

See chapter 5.

6.18 - NOISE LEVELS (DBA) AT OPERATOR EARS

Measured according to EEC Directive 77/311.

Type	EEC 77/311 - Appendix 2	
	Windows closed	Windows open
MT635B	71	79
MT645B	70	79
MT655B	71	80
MT665B	71	81

6.19 - CAPACITIES

Type	Model	Capacity
Main fuel tank		350 l
Additional fuel tank		250 l
Cooling system		34 l
Engine sump		20.7 l
Auxiliary hydraulics		100 l
Clutch hydraulics		0.6 l
Transmission hydraulics		85 l
Rear final drive units (per side)		13 l
Fixed front axle	MT635B/MT645B	14.8 l
	MT655B/MT665B	16 l
Front final drive units with fixed front axle (each)	MT635B/MT645B	1.7 l
	MT655B/MT665B	2.7 l
Suspended front axle	MT635B/MT645B	15 l
	MT655B/MT665B	15.5 l
Front final drive units with suspended front axle (each)	MT635B/MT645B	2 l
	MT655B/MT665B	2.5 l
Windscreen washer		4 l
Air-conditioned		1550 grams

6.20 - TIGHTENING TORQUES

6.20.1 - Wheels

	DISC ON HUB	RIM ON DISC	
		Disc type	
		Waffle	Fixed cast iron
Front axle			
4WD	(M22) 640 to 680 Nm	300 to 320 Nm	-
Rear axle			
Flanged shaft	400 to 450 Nm	-	250 to 350 Nm
Straight shaft	350 to 460 Nm	-	

6.20.2 - Miscellaneous

Power take-off shaft: 69 Nm

Engine oil drain plug: 35 Nm

6.21 - DIMENSIONS AND WEIGHTS

SPECIFICATIONS	MT635B/MT645B	MT655B/MT665B
A. Wheel base	3069	
B. Overall length with lower links without front weights	5068	
C. Height at roof (with rear tyres 650/85R38)	3197	
D. Max. overall width	2550	
E. Max. - min. ground clearance (under swinging drawbar support)	335 to 477	
Kerb weight (full fuel tank, without steel wheel weights)	8500 to 9200	
C. and E.: Dimensions vary according to tyre assembly.		

	Rear axle		Front axle	
	HA 200 MT635B/MT645B	HA 260 MT655B/MT665B	750/601 MT635B/MT645B	760/601 MT655B/MT665B
F. Stud distance:	335		335	425
G. Centring diameter:	280.8		280.6	370.8
H. Stud length:	43		41	47
I. Stud or screw diameter:	M22x1.5			
J. Number of studs or screws:	10		10	12

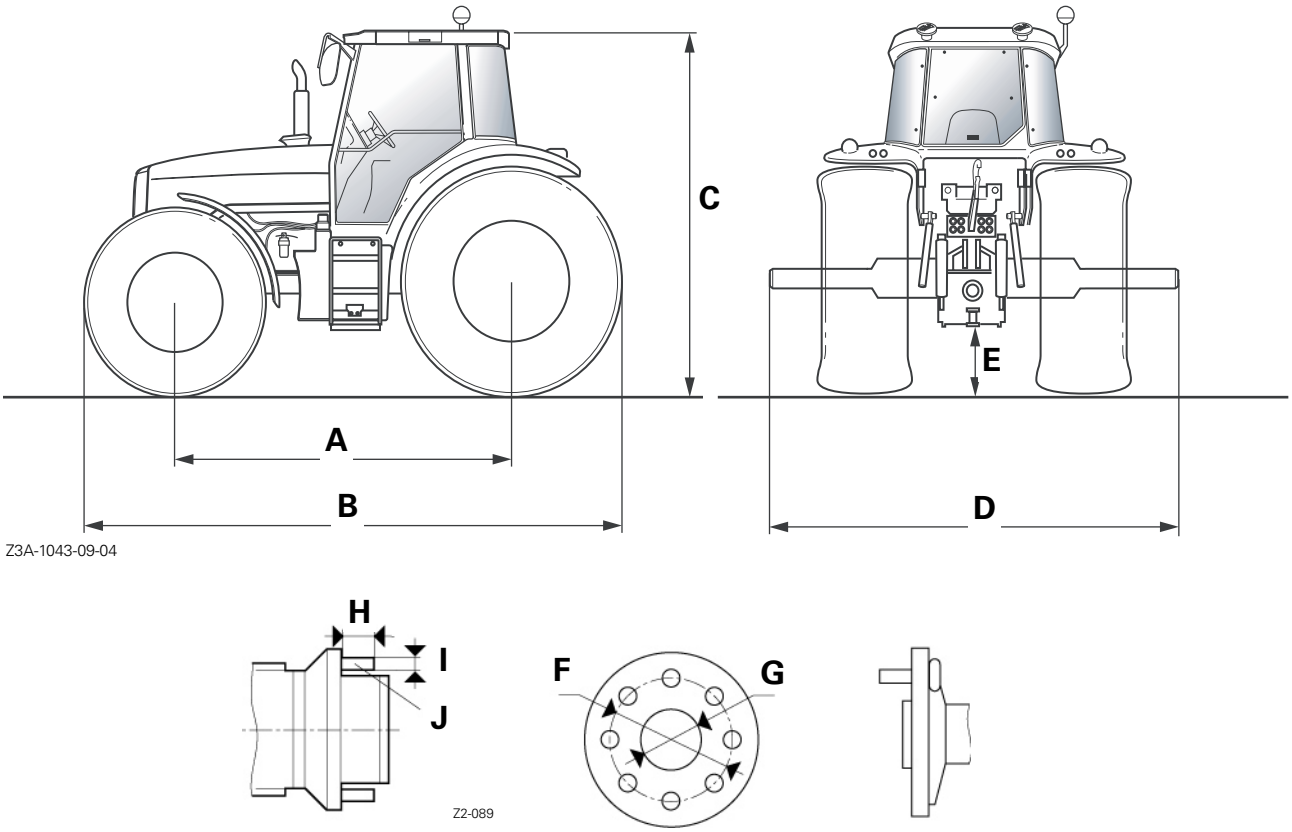
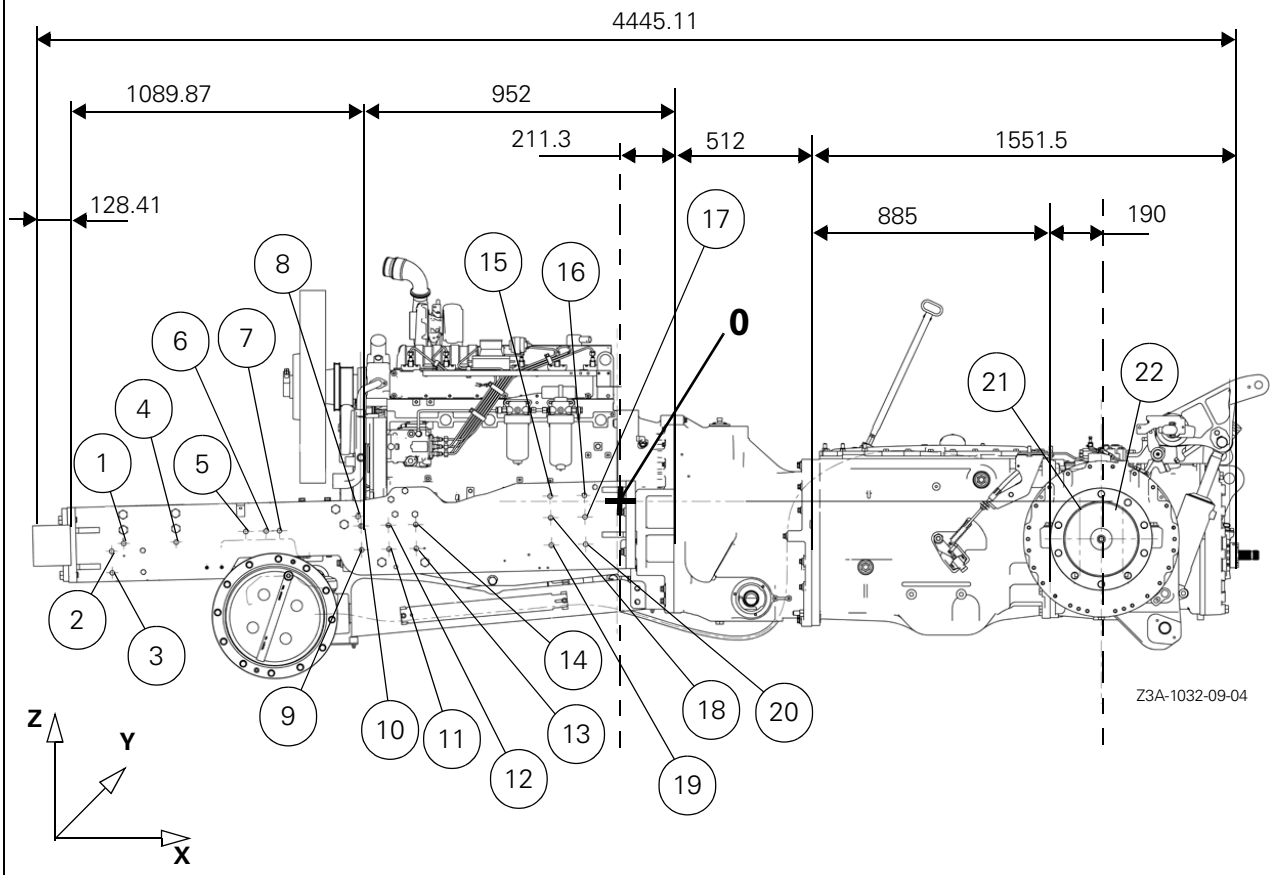


Fig. 2

6.22 - DIMENSIONS AND ATTACHMENT POINTS



REFERENCE 0 = Engine axis		DIMENSIONS mm x	y	z
1	M 20	-1831.54	+/-193.504	-157.14
2	M 20	-1875.9	+/-193.504	-185.17
3	M 20	-1873.89	+/-193.504	-265.14
4	M 20	-1636.6	+/-193.504	-151.24
5	M 20	-1377.98	+/-193.504	-112.08
6	M 20	-1303.05	+/-193.504	-111.19
7	M 20	-1253.07	+/-193.504	-109.93
8	M 20	-961.67	+/-193.504	-57.25
9	M 20	-947.97	+/-193.504	-181.11
10	M 20	-950.21	+/-193.504	92.24
11	M 20	-846.41	+/-193.504	-178.55
12	M 20	-848.64	+/-193.504	-89.98
13	M 20	-118.89	+/-193.504	-176
14	M 20	-747.07	+/-193.504	-87.13
15	M 20	-247.86	+/-308.504	18.15
16	M 20	-120.9	+/-308.504	-21.34
17	M 20	-118.89	+/-308.504	-59.63
18	M 20	-245.85	+/-308.504	-61.83
19	M 20	-243.3	+/-308.504	-163.39
20	M 20	-116.34	+/-308.504	-160.2

REFERENCE 0 = Engine axis		DIMENSIONS mm x	y	z
21	M 20	1718.33	+/-775	-35
22	M 20	1878.33	+/-775	-35

Fig. 3

Chapter 7

ACCESSORIES AND OPTIONS

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7.1 - ACCESSORIES AND OPTIONS

- Rear wheel weights: 1 to 4 external wheel weights
- Front weights: 6x45kg
- Centre weight: 450 kg

The centre weight is not compatible with the front PTO.

IMPORTANT: Removal is not easy and the weight must remain fitted.

- Front hitch: 3T5 or 5T (Chapter 7.2).
- Rear linkage (Chapter 4).
- Rear window wiper and washer.
- Passenger seat.
- Front fenders.
- PTO - different types (chapter 4).
- Fittings for radio (loudspeakers, aerial and wiring).
- Radio.
- Seat belt.
- Battery circuit breaker.
- Datatronic 3 on-board computer.
- FRONT DUAL CONTROL.
- REAR DUAL CONTROL.
- Trailed Implement Control (TIC).

7.2 - FRONT LINKAGE

7.2.1 - General

The front linkage should be used in compliance with safety instructions. It should be used exclusively for agricultural purposes, i.e. for hitching mounted and pushed agricultural machinery.

The front linkage can carry or push an implement.

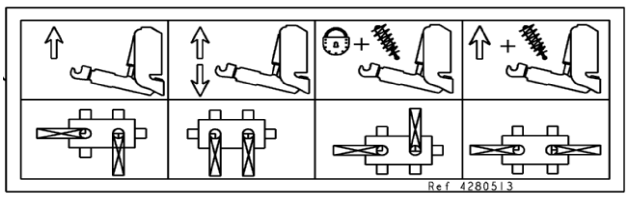
The design of the linkage and tractor allows the use of heavy implements, but it is advisable to avoid submitting the linkage to excessive loads.

Z3A-1028-09-04

Fig. 1

7.2.2 - Operation

IMPORTANT: Position the circuit valves located at the rear of the tractor as shown on the decal.



The front linkage is controlled by the Joystick (1 Fig. 4) located in the cab. To lower the linkage, push the Joystick forwards and to raise the linkage, pull the Joystick backwards.

See Chapter 4 section 4.5.10 to set the linkage flow rate. Using the DOT MATRIX screen. If the tractor is equipped with Datatronic 3, see section 7.7. HYDRAULIC VALVES application.

Controlling the depth:

For toothed implements, the depth is controlled by of the implement depth wheels; in this case set the hydraulic valve to floating position (no load transfer takes place).

Controlling the work depth of the implement after setting the position:

An average depth level should be set using the height / depth control (load transfer is recommended to improve tractor tyre grip).

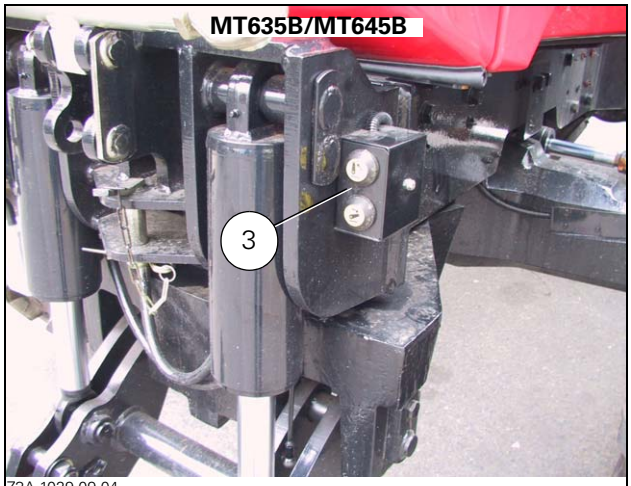
It is then possible to use the draft control mode of the FRONT DUAL CONTROL to adjust the work depth depending on the traction load applied to the rear linkage, especially when using a front and rear plough.

For crushing implements, the tractor load must be transferred to the implement. This is obtained by pushing the lever or Joystick forwards, as long as the linkage is double acting.

Mounted implements (ballasting, hoppers, etc.) are raised to avoid decreasing ground clearance.

- External controls

The external lifting/lowering controls 3 (Fig. 2) can only operate with the engine running.



Z3A-1029-09-04

Fig. 2

Z3A-1030-09-04

Fig. 3

DANGER: Operate the external controls with care, keeping a safe distance from the lift arms.

Apply the following procedure before use:
Before using the external controls, activate the Joystick (indicator light 2 depending on model Fig. 4, Fig. 5 off) and move the rear linkage switch to Neutral or Lower position.
The SMS controls are locked (indicator light permanently lit) every time the external controls have been used.
To use the cab controls again, activate the joystick (indicator light off).

NOTE: The external controls do not operate if the Joystick is not activated after starting the tractor.

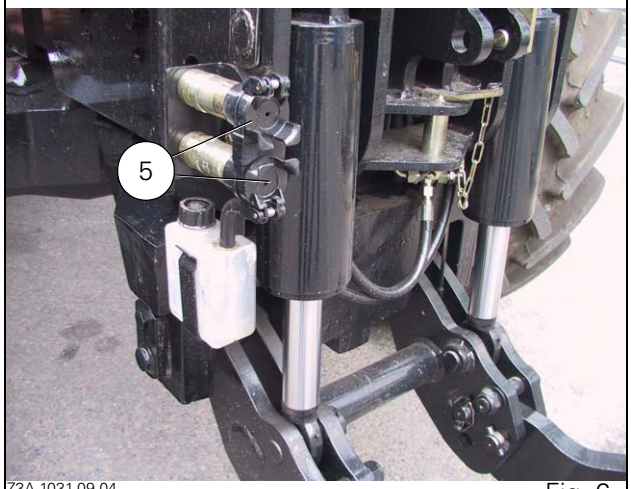
Z3A-1384-01-05

Fig. 4

Z4A-1647-11-05

Fig. 5

The oil ports (5 Fig. 6) are controlled by the hydraulic valve control located in the cab (6 Fig. 7). These ports have the same characteristics as those used at the rear.



Z3A-1031-09-04

Fig. 6

Z3A-715-07-04

Fig. 7

7.2.3 - Loads allowed on the front axle beam

The load allowed on the tractor is limited by the following two factors:
- axle.
- tyres.

Using a long heavy implement can cause an overload on the front axle.
The loads allowed on the front axle should be complied with. To measure the maximum load allowed by the front axle, place the front axle on a scale, lift the front implement and lower the rear implement.

Nominal load allowed on the front axle:

Model	Load
MT635B/MT645B	3500 Kg
MT655B/MT665B	5000 Kg

IMPORTANT: A front implement weighing one ton overloads the axle by more than one ton due to chassis frame overhang (allow on average 1.5 times its weight). The wheelbase length is usually double the implement overhang.

7.2.3.1 - Load allowed by the tyres

The load allowed by the tyres depends on their inflation pressure, maximum travel speed and the torque to be transmitted. In general, the greater the load the tyre must support, the greater its volume should be.

IMPORTANT: This is the most common factor limiting front axle capacity. Tyre manufacturers offer charts detailing loads allowed for a tyre type depending on operating conditions. Failure to respect these limits can lead to tyre damage, an unstable machine, and poorer performance.

Examples for standard agricultural tyres:

Dimension Tyre	Load on axle	Speed	Pressure
480/70R34	5T	30 kph	1.4 bar
600/65R28	3 T	30 kph	0.4 bar

7.2.4 - Hitching an implement

Three positions can be used depending on requirements:
- fixed position
- floating position,
- transport position for MT635B and MT645B tractors.

(Fig. 8)

1. Fixed position:
   Position the lift arms horizontally and fit the pin in position 7.
2. Floating position:
   Position the arms horizontally and insert the pin in position 8.
   This position can be used to compensate for sloping ground, thus allowing the implement to follow the natural lie of the land.
   Example: Implement with a soil engagement wheel either side or a roller.
3. Transport position (for MT635B and MT645B tractors):
   No implement attached: Position the arms vertically to reduce bulkiness and insert the pin in position 9.

- The linkage is fitted with automatic lower jaws, allowing an implement to be hitched safely from the tractor cab.

Apply the following procedure when hitching an implement.

1. Move the lift arms to working position (fixed or floating), and fit the hitch ball joints to the implement using suitable stop pins.
2. Drive the tractor forwards towards the implement and lower the lower arms.
3. Drive the tractor forwards to position the jaws under the balls, and raise the lower arms carefully until the jaws lock.
4. Activate the parking brake (ParkLock) and switch off the engine before getting out of the tractor.
5. Install the third-point linkage, adjusting its length to ensure correct implement height and couple the hydraulic unions.
6. Store implements on flat ground to keep them stable. This makes hitching and unhitching easier.

Unhitching: carry out the operations in reverse order.
The external controls can also be used to adjust the linkage.

- Storing the third-point linkage

It is advisable to store the top link on its support when not in use.

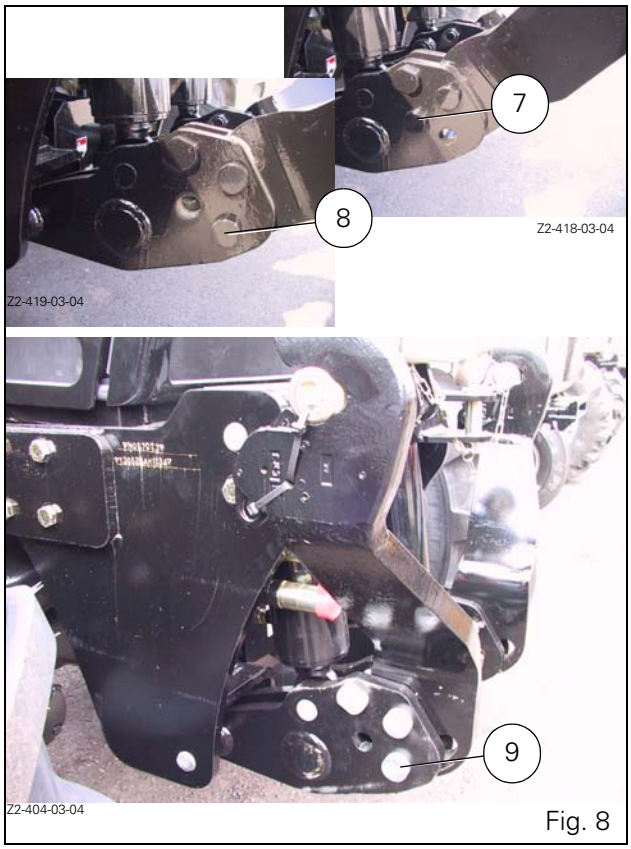


Fig. 8

7.2.5 - Driving on the road

- Controlling the active transport control system

This makes driving with lift implements at high speeds more comfortable. It cannot be used for field work. Implement height cannot be adjusted when the transport control system is operating.
To switch on the shock absorber, lift the implement, leaving 40 to 50 mm of cylinder travel to allow shock absorbency to function (release).

WARNING: The valves must be positioned at "transport control system" position (see decal) to deactivate the hydraulic valve action and avoid accidental lowering of the implement.

- Servicing the linkage

Take good care of equipment during use, and make sure that it is serviced at regular intervals. This helps ensure manufacture quality performance and reliability for a number of years.
Regularly check the tightness of screws, especially the first few times the linkage is used.

Change hydraulic feed hoses in poor condition as a preventive measure, even if there is no leak (danger of bursts during use).
Breakdowns and accidents always cost more.

• Lubrication
See section 5.6.

7.3 - "ZUIDBERG" FRONT POWER TAKE-OFF

Fig. 9: This PTO functions hydraulically in a separate, independent system; the entire system is cooled by an oil cooler.

7.3.1 - Permissible power output

Unlike the power available to the rear PTO and the wheels, the front PTO power must be limited.
- For SISU engines, half of the engine power can be used for the front PTO.
- For 6-cylinder CAT engines, 75 hp is the maximum permissible power for the front PTO.

Do not use implements that require higher power levels than those stated above. Instead, use the rear PTO for heavy work (driving stationary choppers etc.).

NOTE: When stationary, manual rotation of the PTO through 15° facilitates implement hitching.

Z2-420-03-04 Fig. 9

• Power take-off control (Fig. 10):
A controller located at the front under the grille enables the clutch cycling setting to be increased or decreased (2 to 6 seconds) by adjusting screw 1 (maximum ¾ turn).

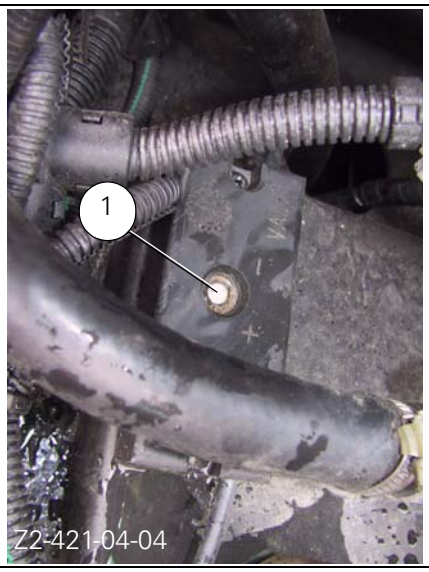


Fig. 10

7.3.2 - Power take off control

Fig. 11: The PTO is controlled by the switch ref. 1 located in the cab.

To engage the PTO, slide the red safety slider, as indicated by the arrow, while pressing the switch, as shown by ref. D, to unlock it.

Press in the direction indicated by ref. E to stop the PTO; in this position the switch prevents accidental engagement.

IMPORTANT: When the PTO is stopped, the PTO brake is engaged.

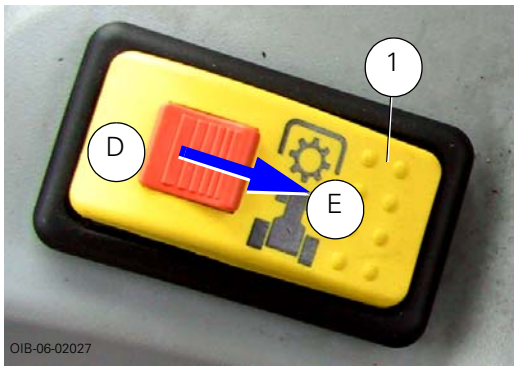


Fig. 11

The cab control activates a solenoid valve placed close to the front PTO unit; this valve controls the PTO clutch and brake.

The pressure at the valve inlet is 17 bar (246.57 lbf/in²)

7.3.3 - Maintenance

In addition to taking good care of equipment during use, it should undergo regular maintenance. This helps ensure manufacture quality performance and reliability for a number of years.

Regularly check the tightness of screws, especially during the first few operations. Improper tightening causes parts to move in relation to each other and reduces the strength of the linkage.

IMPORTANT: Replace hydraulic hoses in poor condition as a preventive measure, even if there is no leak (danger of bursts during use).

- Filter maintenance and draining: refer to section 5.2.
- Specifications of oil used: refer to section 5.4.
- Lubrication: see section 5.6.

7.3.4 - Tightening torques

The tightening torques in the table below must be complied with:

screw Ø (mm)	Tightening torque (daNm) depending on screw grade	
	8.8	10.9
5	0.6	0.9
6	1	1.5
8	2.5	3.5
10	5	7
12	8.5	11.5
14	12.5	18
16	20	27.5
18	26.5	37.5
20	38	54
22	50	71.5
24	65.5	92
30	120	169

Appendix

CONVERSION TABLES

LENGTH		
multiply by		
mm	x 0.0394	in
in	x 25.400	mm
m	x 3.2808	ft
ft	x 0.3048	m
km	x 0.6214	mile
mile	x 1.6093	km

AREA		
multiply by		
mm^2	x 0.0016	in^2
in^2	x 645.16	mm^2
m^2	x 10.764	ft^2
ft^2	x 0.0929	m^2
ha	x 2.4711	acre
acre	x 0.4047	ha

VOLUME		
multiply by		
cm^3	x 0.06102	in^3
in^3	x 16.387	cm^3
m^3	x 35.315	ft^3
ft^3	x 0.0283	m^3

CAPACITY		
multiply by		
ml	x 0.0351	fl oz
fl oz	x 28.413	ml
l	x 0.2200	gal
gal	x 4.5640	l
l	x 0.2640	US gal
US gal	x 3.7850	l
gal	x 1.2010	US gal
US gal	x 0.8330	gal

POWER		
multiply by		
ps	x 0.9863	hp
hp	x 1.0139	ps
kW	x 1.3410	hp
hp	x 0.7457	kW

TORQUE		
multiply by		
Nm	x 0.738	lbf ft
lbf ft	x 1.356	Nm

PRESSURE		
multiply by		
bar	x 14.504	lbf/in^2
lbf/in^2	x 0.0690	bar

SPEED		
multiply by		
km/h	x 0.6214	mph
mph	x 1.6093	km/h

WEIGHT		
multiply by		
g	x 0.0353	oz
oz	x 28.350	g
kg	x 2.2046	lb
lb	x 0.4536	kg
kg	x 0.00098	UK ton
UK ton	x 1016.1	kg
t	x 0.9842	UK ton
UK ton	x 1.016	t
t	x 1.1023	US ton
US ton	x 0.9072	t

TEMPERATURE		
°C	°C x 1.8 + 32	°F
°F	(°F - 32)/1.8	°C

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3378976M1

Printed in France
RC B562 104 539