4300 Series Tractor Workshop Manual

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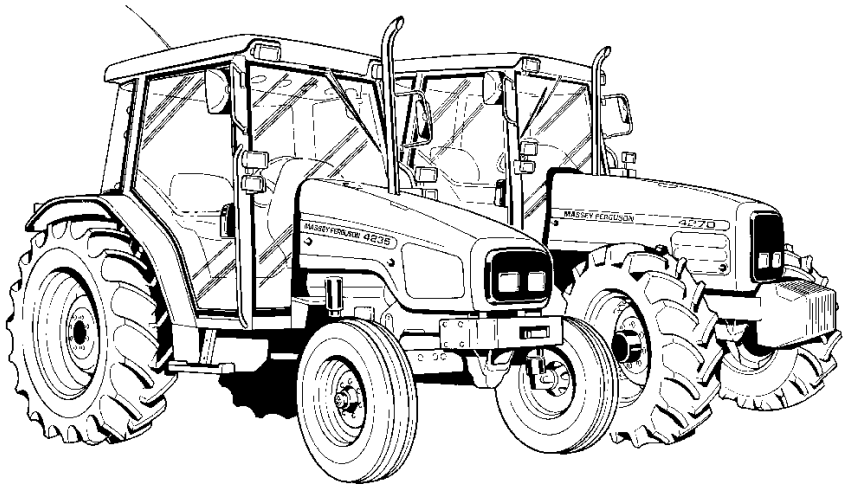

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4200 Series Tractor Workshop Manual

SECTION 1

Introduction and Safety

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Introduction and Safety in the Workshop

Section 1 - Part A

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INTRODUCTION

The purpose of this manual is to assist Dealers and Distributors in the efficient repair and maintenance of Massey Ferguson farm machinery. Carrying out the procedures as detailed, together with the use of special tools where appropriate, will enable the operations to be completed within the time stated in the Repair Time Schedule.

To assist with locating information, each section of the manual is preceded by a contents page listing the operations. Each instruction within an operation has a sequence number, and to complete the operation in the minimum time it is essential that these instructions are performed in numerical sequence commencing at 1, unless otherwise stated.

When applicable, these sequence numbers identify the components in the appropriate illustration. Where an operation requires the use of a special tool, the tool number is quoted under the operation heading and is repeated in, or following, the instruction involving its use.

Indexing

For convenience the manual is divided into sections and parts, each page bearing a section and part number. The sections are subdivided into numbered operations. Example: 1-7A would be Operation 1 in Section 7, Part A. This simplifies cross referencing and enables the subject to be found easily.

Definition of Terms

The operation descriptions generally used throughout the schedules may be defined as follows:

Removal and Refitment - Remove and refit an original part or assembly, or a new part or assembly which does not involve additional operations or time.

Install - Install a part or component not previously fitted e.g., accessories.

Overhaul - Remove a part or assembly, dismantle, inspect and recondition, re-assemble, and re-install making all necessary adjustments.

Dis-assembly and Re-assembly - The terms `Dis-assembly' and `Re-assembly' indicate the orderly taking apart of an assembly into individual parts and rebuilding it into the original assembly.

Adjust - Make the necessary adjustments to restore specified setting or performance.

Check - Ascertain if a setting or condition is within the limits of acceptability, either as defined in the manufacturer's specifications or, where a dimension is not specified, in the judgement of the mechanic. The checking of fixings, e.g. nuts and bolts, includes tightening to the specified torque figures listed in this Manual.

Servicing - All technical work undertaken to maintain the machine in working order.

Special Tools

Where the use of a special tool is specified in an operation the tool number will be shown under the operation heading and also following the instruction requiring its use.

The use of the special tools mentioned in the text contributes to a safe, efficient and profitable repair. Some operations are impracticable without their use, for example, the refitment of the differential unit. Distributors and Dealers are therefore urged to check their tools against the list provided. Where necessary, tools may be ordered from: AGCO Limited. Product Reliability, Banner Lane, Coventry. CV4 9FG (Phone 44 (0) 1203 694400) (Fax 44 (0) 1203 852318).

For further details, refer to the special tool catalogue for this range of tractors, Publication No. 1856 550 M5, or Section 14 of this manual.

Repairs and Replacements

When service parts are required it is essential that only genuine Massey Ferguson replacements are used.

Attention is particularly drawn to the following points concerning repairs and the fitting of replacement parts and accessories:

Safety features embodied in the tractor may be impaired if other than genuine parts are fitted.

In certain territories, legislation prohibits the fitting of parts not to the tractor manufacturer's specification. Torque wrench setting figures given in the Workshop Manual must be strictly adhered to. Locking devices where specified must be fitted. If the efficiency of a locking device is impaired during removal it must be renewed.

The tractor warranty may be invalidated by the fitting of other than genuine Massey Ferguson parts. All Massey Ferguson replacements have the full backing of the manufacturer's warranty. Massey Ferguson Distributors and Dealers are obliged to supply only genuine service parts.

Repair of the Tractor

Follow these important points:

CLEAN THE TRACTOR AND DIAGNOSE THE FAULT BEFORE DIS-ASSEMBLY.

If possible, make a complete diagnosis to determine the extent of the repair required. Take precautions, as necessary, to prevent dirt or other foreign material entering the hydraulic, fuel or air systems.

DO NOT MIX PARTS.

Make particular note of special parts which should not be interchanged.

DURING DIS-ASSEMBLY, CLEAN PARTS THOROUGHLY AND INSPECT THEM FOR WEAR, DAMAGE, ETC.

LABEL PARTS. PROTECT PRECISION OR MACHINED SURFACES.

Amendments

Under normal conditions revised pages are issued carrying the same number as the existing pages requiring amendment. The new pages are inserted in place of the existing ones. The old pages should then be destroyed.

The issue number is printed on the bottom of each page, e.g. Issue 1, 2 or 3 etc.

In some cases additional pages or completely new sections may be issued. These pages are to be inserted immediately following the page carrying the next lowest page number, or section number as appropriate.

Where new pages are required to be positioned between existing pages, the new page numbers will contain a suffix letter - example: New page number 7A-16a. This page is inserted after existing page number 7A-16 and before page number 7A-17. Correspondingly a further new page numbered 7A-16b would be positioned after 7A-16a but before 7A-17.

To ensure that a record of amendments to this manual is readily available, the list of amendments will be re-issued with each set of revised pages, quoting the amendment number, date of issue and appropriate instructions.

NOTE: *Service Bulletins and Amendment Sheets are issued to the Massey Ferguson Distributors and Dealers only and are not for general circulation.*

Amendment Status

Date	Issue	Page	Remarks
May 1997	M1	Issue 1 released	
August 1998	M2	New sections and issue 2 pages released.	Supplement S1/1857 053 M1 refers.
April 1999	M3	Sections 5J, 8D and 12C added. Issue 2 & 3 pages released.	Supplement 1857 053 S3 refers.
February 2000	M4	Section 10C added. Issue 2 & 3 pages released.	Supplement 1857 053 S4 refers.

Introduction and Safety in the Workshop

SAFETY ALERT SYMBOL AND TERMS

This safety alert symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

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

Why is SAFETY important to you?

★ **ACCIDENTS DISABLE and KILL** ★

★ **ACCIDENTS are COSTLY** ★

★ **ACCIDENTS can be AVOIDED** ★

SAFETY in the WORKSHOP

This safety section of your Workshop Service manual is intended to point out some of the basic safety situations which may be encountered during the normal repair operations of the tractor, and to suggest possible ways of dealing with these situations.

Additional precautions may be necessary, depending on the type of repair and the conditions at the work site or in the workshop. Massey Ferguson has no direct control over the repair procedures, operation, inspection, lubrication or general maintenance. Therefore it is YOUR responsibility to use good safety practices in these areas.

SAFETY - A WORD to the MECHANIC

It is your responsibility to read and understand this safety section before carrying out repairs on Massey Ferguson equipment.

Remember that YOU are the key to safety. Good safety practices not only protect you, but also the people around you. Study the features in this section and the rest of the manual and make them a working part of your safety programme. Practice all other usual and customary safe working precautions, and above all – REMEMBER – SAFETY IS YOUR RESPONSIBILITY. YOU CAN PREVENT SERIOUS INJURY OR DEATH.

SAFETY - DANGER, WARNING and CAUTION

Whenever you see these signal words and symbol  used in this manual and on decals, you MUST take note of their instructions.

DANGER: The symbol and the word DANGER indicates an imminently hazardous situation which, if not avoided, will result in DEATH OR VERY SERIOUS INJURY.

WARNING: The symbol and the word WARNING indicates a potentially hazardous situation. If the instructions or procedures are not correctly followed it could result in PERSONAL INJURY, OR LOSS OF LIFE.

CAUTION: *The symbol and the word CAUTION is used to indicate a potentially hazardous situation that, if not avoided, may result in MINOR OR MODERATE INJURY.*

IMPORTANT: *The word IMPORTANT is used to identify special instructions which, if not observed, could result in damage to, or destruction of the machine, process or its surroundings.*

NOTE: *The word NOTE is used to indicate points of particular interest for more efficient and convenient repair or operation.*

SAFETY DECALS

WARNING: DO NOT remove or obscure Danger, Warning or Instruction Decals.

Replace any Danger, Warning, Caution or Instruction Decals that are not readable, damaged or are missing.

GENERAL

Practically all service work involves the need to drive a tractor. The Operator Instruction Book, supplied with each tractor or implement, contains detailed safety precautions relating to driving, operating and servicing. These precautions are as applicable to the service mechanic as they are to the operator, and should be read, understood and practised by all personnel.

Prior to undertaking any maintenance, repair, overhaul, dismantling or re-assembly operations, whether within a workshop facility or out 'in the field', consideration should be given to factors that may have an effect upon Safety, not only upon the mechanic carrying out the work, but also upon bystanders.

- DO NOT allow children or bystanders around or on the machine while it is being adjusted, serviced, repaired or operated.

PERSONAL CONSIDERATIONS

Clothing

- The wrong clothes or carelessness in dress can cause accidents. Check to see that you are suitably clothed. DO NOT wear loose clothing or long hair around equipment.

Some jobs require special protective equipment

Eye Protection

- The smallest eye injury may cause loss of vision. Injury can be avoided by wearing the proper eye protection when engaged in chiselling, grinding, discing, sanding, welding, painting etc.
- Wear safety goggles or safety glasses appropriate to the job in hand.

Breathing Protection

- Fumes, dust and paint spray are unpleasant and harmful. These can be avoided by wearing respiratory protection.

Hearing Protection

- Loud noise may damage your hearing and the greater the exposure the worse the damage. If you think the noise is excessive, wear ear protection.

Hand Protection

- It is advisable to use a protective barrier cream before work to prevent irritation and skin contamination. After work clean your hands in soap and water. Solvents such as white spirit, paraffin, etc., may harm the skin.
- Wear gloves when ever possible to protect your hands. DO NOT wear rings or wrist watches when working on machinery, as they could catch on moving parts and cause serious injury.

Foot Protection

- Substantial or protective footwear with reinforced toe-caps (safety shoes) will protect your feet from falling objects. Additionally, oil-resistant soles will help to avoid slipping.

Special Clothing

- For certain work it may be necessary to wear flame or acid-resistant clothing.

EQUIPMENT CONSIDERATIONS

Machine Guards

- Before using any machine, check to ensure that the machine guards are in position and serviceable. These guards not only prevent parts of the body or clothing coming in contact with the moving parts of the machine, but also ward off objects that might fly off the machine and cause injury. Ensure that missing guards are replaced.

Lifting Appliances

- Always ensure that lifting equipment, such as chains, slings, lifting brackets, hooks and eyes are thoroughly checked before use. If in doubt, select stronger equipment than is necessary.
- Never stand under a suspended load or raised implement.
- Avoid injury through incorrect handling of components. Make sure you are capable of lifting the object. If in doubt get help.

Jacking

- Select a jack strong enough to carry the load.
- Stabilise the tractor and chock the wheels.
- Put support stands under the tractor. Lower the jack and let the tractor rest on the stands.
- DO NOT go under a tractor supported by a chain hoist or jack.

Compressed Air

- The pressure from a compressed air line is often as high as 7 bar (100 lbf/in²). It is perfectly safe if used correctly. Any misuse may cause injury.
- Never use compressed air to blow dust, filings, dirt etc., away from your work area unless the correct type of nozzle is fitted and eye protection is used.
- Compressed air is not a cleaning agent, it will only move dust, etc., from one place to another. Look around before using an air hose as bystanders may get grit into their eyes, ears or skin.
- Used approved air guns, wear safety goggles, and use proper shielding to protect others in the work area.
- Never point an air nozzle at a persons body.

Hand Tools

- Many cuts, abrasions and injuries are caused by defective tools. Never use the wrong tool for the job, as this generally leads either to some injury, or to a poor job.
- Never use:–
  - A hammer with a loose head or split handle.
  - Spanners or wrenches with splayed or worn jaws.
  - Spanners or files as hammers; or drills, clevis pins or bolts as punches.
- Grind off mushroom heads from chisels. The sharp edges can tear your skin if the tool slips. And, when the tool is struck, chips could break off and fly into your eyes.
- Keep a handle on every file to prevent the tang from piercing your palm or wrist if the file should slip or catch.
- For removing or replacing hardened pins use a copper or brass drift rather than a hammer.
- For dismantling, overhauling and assembly of major components, always use Special Service Tools recommended.

  These will reduce the work effort, labour time and repair cost.
- Always keep tools clean and in good working order.

Electricity

- Electricity has become so familiar in day to day usage, that its potentially dangerous properties are often overlooked. Misuse of electrical equipment can endanger life.
- Before using any electrical equipment - particularly portable appliances - make a visual check to make sure that the cable is not worn or frayed and that the plugs, sockets, etc., are intact; make sure you know where the nearest isolating switch is located. Always use an earthed (grounded) 3 pin electrical cord.

GENERAL CONSIDERATIONS

Solvents

- Use only cleaning fluids and solvents that are known to be safe. Certain types of fluids can cause damage to components such as seals, etc., and can cause skin irritation. Solvent labels should be checked that they are suitable not only for the cleaning of components and individual parts, but also that they DO NOT affect the personal safety of the user.

Housekeeping

- Many injuries result from tripping or slipping over or on, objects or material left lying around by a careless worker. Prevent these accidents from occurring. If you notice a hazard, don't ignore it - remove it.
- A clean, hazard-free place of work improves the surroundings and daily environment for everybody.
- Keep work organised and clean. Wipe up spills of any kind to minimise the possibility of a fall. Keep tools and parts off the floor to further reduce the possibility of tripping and causing serious injury.

Fire

- Fire has no respect for persons or property. The destruction that fire can cause is not always fully realised. Everyone must be constantly on guard.
  - Extinguish matches, cigars, cigarettes, etc., before throwing them away.
  - Work cleanly, disposing of waste material into proper containers.
  - Locate the fire extinguishers and find out how to operate them.
  - DO NOT allow or use open flame near the fuel tank, fuel lines, battery, hydraulic hoses or component parts
- When using a gas torch, always keep a fully charged fire extinguisher within reach.
- In the event of fire:
  - DO NOT panic - warn those near and raise the alarm.

First Aid

- In the type of work that mechanics are engaged in, dirt, grease, fine dust, etc. all settle upon the skin and clothing. If a cut, abrasion or burn is disregarded it may be found that an infection has formed within a short time. What appears at first to be trivial could become painful and injurious. It only takes a few minutes to have a fresh cut dressed, but it will take longer if you neglect it. Make sure you know where the First Aid box is located and that it is kept fully stocked at all times.

OPERATIONAL CONSIDERATIONS

- Stop the engine, if at all possible, before performing any service.
- Place a warning sign on self propelled equipment which, due for service or overhaul, would be dangerous to start. Disconnect the battery leads if leaving such a unit unattended and remove the key.
- DO NOT attempt to start the engine while standing beside the tractor or attempt to by-pass the safety start switch. Make a practise of checking that neutral start switches are functioning correctly.
- Avoid prolonged running of the engine in a closed building or in an area with inadequate ventilation as exhaust fumes are highly toxic.
- Always turn the radiator cap to the first stop to allow pressure in the system to dissipate when the coolant is hot.
- Never work beneath a tractor which is on soft ground. Always take the unit to an area which has a hard level working surface - concrete is preferred.
- If it is found necessary to raise the equipment for ease of servicing or repair, make sure that safe and stable supports are installed, beneath axle housings, casings, etc., before commencing work.
- Certain repair or overhaul procedures may necessitate 'Separating the tractor', either at the engine gearbox or gearbox/rear axle locations. These operations are simplified by the use of the Tractor Splitting Kit/Stands (Use the Massey Ferguson MF.3012 Tractor Splitting Track, also available, MF.3013 Cab Stands). Should this equipment not be available, then every consideration must be given to stability, balance and weight of the components, especially if a cab is installed.
- Use footsteps or working platforms when servicing those areas that are not within easy reach.
- Cleanliness of the tractor hydraulic system is essential for optimum performance. When carrying out service and repairs plug all hose ends and component connections to prevent dirt entry.
- Clean the exterior of all components before carrying out any form of repair. Dirt and abrasive dust can reduce the efficiency and working life of a component and lead to costly replacement. Use of high pressure washer or steam cleaner is recommended.
- Before loosening any hoses or tubes connecting implements to remote control valves, etc., switch off the engine, remove all pressure in the lines by operating levers several times. This will remove the danger of personal injury by oil pressure.
- Prior to pressure testing, make sure all hoses and connectors not only of the equipment, but also those of the test equipment, are in good condition and tightly sealed. Pressure readings must be taken with the gauges specified. The correct procedure should be rigidly observed to prevent damage to the system or equipment, and to eliminate the possibility of personal injury.
- Hydraulic fluid escaping under pressure can have enough force to penetrate the human skin. To locate a leak under pressure, use a small piece of cardboard, never use your hands. If you are injected with hydraulic fluid seek medical help immediately.
- When equipment or implements are required to be attached to the hydraulic linkage, either for testing purposes or for transportation, the 'Position Control' should be used.
- Always lower equipment to the ground when leaving the tractor.
- If high lift attachments are installed on a tractor beware of overhead power, electric or telephone cables when travelling. Drop the attachment near to ground level to increase stability and minimise risks.
- DO NOT park or attempt to service the equipment on an incline. If unavoidable, take extra care and chock all wheels.
- Observe recommended precautions as indicated in this Service Manual when dismantling the air conditioning system as escaping refrigerant can cause frostbite.
- Prior to removing wheels and tyres from a tractor, check to determine whether additional ballast (liquid or weights) has been added. Seek assistance and use suitable equipment to support the weight of the wheel assembly. Store the wheel so that they cannot fall over and cause injury.
- When inflating tyres beware of over inflation - constantly check the pressure. Over inflation can cause tyres to burst and result in personal injury.

Heed these safety precautions, and the ones found in this manual, and you will protect yourself accordingly. Disregard them and you may become injured for life.

SERVICING TECHNIQUES

Service Safety

Appropriate service methods and proper repair procedures are essential for the safe, reliable operation of all farm machinery as well as the personal safety of the individual doing the work.

This Service Manual provides general directions for accomplishing service and repair work with tested, effective techniques. Following them will help assure that a thorough repair is successfully completed.

There are numerous variations in procedures, techniques, tools, and parts for servicing tractors, as well as in the skill of the individual doing the work. This Manual cannot possibly anticipate all such variations and provide advice or cautions as to each. Anyone who departs from the instructions provided in this Manual must realise that one compromises their personal safety and the tractor's integrity by the choice of repair methods, tools and/or parts.

Service Techniques

Clean the exterior of all components before carrying any form of repair. Dirt and abrasive dust can reduce the efficient working life of a component and lead to costly replacement.

Time spent on the preparation and cleanliness of working surfaces will pay dividends in making the job easier and safer and will result in overhauled components being more reliable and efficient in operation.

Use cleaning fluids which are known to be safe. Certain types of fluid can cause damage to 'O' rings and cause skin irritation. Check the label on Solvents to ensure that they are suitable for the cleaning of components and also that they DO NOT risk the personal safety of the user.

Replace 'O' rings, seals or gaskets whenever they are disturbed. Never mix new and old seals or 'O' rings, regardless of condition. Always lubricate new seals and 'O' rings with hydraulic oil before installation.

When replacing component parts use the correct tool for the job.

Hoses and Tubes

Always replace hoses and tubes if their ends are damaged.

When installing a new hose, loosely connect each end and make sure the hose takes up the designed position before tightening the connection. Clamps should be tightened sufficiently to hold the hose without crushing and to prevent chafing or contact with other parts.

Before removing hoses or tubes make sure they are identified so that they can be correctly re-assembled.

Be sure any hose which has been installed is not kinked or twisted after it is tightened.

Bearings

Bearings which are considered suitable for further service should be cleaned in a suitable solvent and immersed in clean lubricating oil until required.

DO NOT spin bearings with compressed air. The centrifugal force could cause a ball or roller to fly outward with enough force to cause an injury.

Installation of a bearing can be classified in two ways: press fit on rotating parts such as shafts, and gears, and push fit into static locations such as reduction gear housings. Where possible, always install the bearing onto the rotating component first.

Always use pullers or a press to remove and/or install bearings, bushings and cylinder sleeves, etc. Use hammers, punches and chisels only when absolutely necessary and be sure to wear safety goggles.

Shims

When shims are removed, tie them together and identify them as to location. Keep shims clean and flat until they are re-installed.

Gaskets

Be sure the holes in the gasket correspond with the lubricant passages in the mating parts. If gaskets are to be made, select material of the proper type and thickness. Be sure to cut holes in the right places. Blank gaskets can cause serious damage - always renew gaskets prior to re-installation.

Lip Type Seals

Lubricate the lips of the lip-type seals before installation. Use petroleum jelly. DO NOT use grease. Ensure that the oil seal is fitted the right way round, the lip of the seal is placed next to the lubricant that is sealed. Some seals have a second auxiliary lip, which is used to prevent the ingress of dirt to the seal lip.

If, during installation, the seal lip must pass over a shaft that has splines, a keyway, rough surface or a sharp edge, the lip can be easily damaged. Always use a seal protector, when one is provided.

Use of Bolts in Blind Holes

Use bolts of the correct length. A bolt which is too long may 'bottom' before the head is tight against the part it is to hold. The threads can be damaged when a `long' bolt is removed. If a bolt is too short, there may not be enough threads engaged to hold the part securely.

Locking Devices

Lockwashers, flat metal locks or split pins are used to lock nuts and bolts.

Flat metal locks must be installed properly to be effective. Bend one end of the lock around the edge of the part. Bend the other end against one flat surface of the nut or bolt head. Always install new locks.

Always fit new split pins/cotter pins and bend the ends round so that they will not catch in clothing and help to prevent cuts.

Cables and Wires

When removing or disconnecting a group of cables or wires, tag each one to assure proper re-assembly.

Always clip back wires and cable looms properly to prevent chafing, cable damage and possible damage by fire.

Tractor Specification

Section 1 - Part B

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Tractor Specification

TRACTOR SPECIFICATION

Engine

Make	Perkins diesel to Massey Ferguson specification.
Type	Four stroke, water cooled, direct injection.
Models applicable - World-wide Cab:	Model ..... Perkins code
4215 - Low emission	903.27 ..... CP
4220 - Low emission - Turbocharged	903.27T ..... CR
4225 - Normal emission	4.41 ..... LM
4235 - Normal emission	4.41 ..... LM
4245 - Normal emission - Turbocharged	1004.40T ..... AH
4255 - Normal emission - Turbocharged	1004.40T ..... AH
4260 - Normal emission	1006.60 ..... YA
4270 - Normal emission	1006.60 ..... YA
Model applicable - North American Cab and Footstep:	
4225 - Low emission	1004.40 ..... AJ
4233 - Low emission	1004.42 ..... AK
4235 - Low emission - Turbocharged	1004.40T ..... AK
4243, 4245 - Low emission - Turbocharged	1004.40T ..... AK
4253, 4255 - Low emission - Turbocharged	1004.40T ..... AK
4263 - Low emission	1006.60 ..... YG
4270 - Low emission - Turbocharged	1006.60T ..... YH
Cylinders	3, 4 or 6.
Idle speed - all models	750 ± 25 rev/min.
Maximum rated speed - 4215, 4220	2250 ± 25 rev/min.
Maximum rated speed - all other models	2200 ± 25 rev/min.
Maximum no load speed - World-wide Cab:	
4215, 4220 - Normal emission	2420 ± 25 rev/min.
4225, 4235 - Normal emission	2350 ± 25 rev/min.
4245, 4255, 4260, 4270 - Normal emission	2310 ± 25 rev/min.
Maximum no load speed - North American Cab and Footstep:	
All models	2350 ± 25 rev/min.
Valve tip clearance:	
All tractors - Inlet (hot or cold)	0,20 mm (0.008 in).
All tractors - Exhaust (hot or cold)	0,45 mm (0.018 in).
Engine power and torque	Refer to Engine Section 3.

Cooling System

Type	Thermostat controlled with centrifugal pump to assist circulation multi-blade fan driven by a single or double belt from the crankshaft pulley.
Radiator pressure cap rating	0,75 bar (10 lbf/in²).
Fan belt(s) deflection	10 mm (3/8 in) or 35 N (8 lbf).
Air conditioner compressor belt deflection	15 mm (1/2 in).

Fuel System

Fuel lift pump	Mechanical, driven from camshaft, hand primed.
Fuel Filter	Lucas canister type filter.
Water sedimentor	Lucas with transparent sediment bowl.
Injection Pump	Lucas distributor type with mechanical governor.
Injectors	Lucas nozzles and holders.
Starting aid	Lucas thermostart.

Air System

Type	Two stage dry element with warning light. Removable main and secondary element.

Clutch

Dry type:	
4215, 4220, 4225, 4233, 4235	305 mm (12 in) - Coil spring type.
4243 to 4270	330 mm (13 in) - Belleville spring type.
Clutch adjustment	No routine adjustment required.
Clutch pedal height:	
Lo-Profile cab	190-200 mm (7.7-7.9 in)
Standard cab	160-170 mm (6.3-6.7 in)
Footstep	160-170 mm (6.3-6.7 in)
Oil cooled type:	
Type	Multi-plate, oil cooled, mechanically operated.
Clutch adjustment	None.
Clutch pedal height:	
Lo-Profile cab	210-230 mm (8.3-9.0 in)
Standard cab	180-190 mm (7.0-7.5 in)
Footstep	180-190 mm (7.0-7.5 in)

Transmissions

8 x 2 Manual gearbox	The eight speed Manual gearbox has 8 forward and 2 reverse speeds. This is achieved by using a four forward and one reverse gearbox, no synchromesh is provided. This is compounded by a two speed range gearbox and controlled by centre shift levers. Reverse is available in high and low ratio.
Number of gears forward	8.
Number of gears reverse	2.
18 x 6 Speedshift gearbox	The 18 Speedshift gearbox has 18 forward and six reverse speeds. This is achieved by using a three forward and one reverse speed gearbox with synchromesh on all gears. This is compounded by a three speed range gearbox to give nine forward and three reverse speeds. At the front of the gearbox there is an electro/hydraulically operated Fast/Slow Speedshift unit which doubles the number of speeds to 18 forward and six reverse.
Number of gears forward	18.
Number of gears reverse	6.
12 x 12 Shuttle gearbox	The 12 x 12 Shuttle gearbox has twelve speeds forward and reverse. This is achieved by using a four-speed gearbox, compounded by a three-speed range gearbox to give twelve speeds. A forward/reverse unit is situated in front of the gearbox, all gears are synchromesh. A creeper attachment is available with this transmission with a reduction ratio of 4.7 : 1.
Number of gears forward	12.
Number of gears reverse	12.
12 speed shuttle creeper gearbox	The creeper reduction unit is a self contained set of gears mounted in the front section of the gearbox above the forward and reverse shuttle gears.
Application	Tractors fitted with 12 speed shuttle gearbox.
Speed reduction ratio	4.7 : 1.
Number of creeper speeds	4.

Tractor Specification

12 x 4 Synchromesh gearbox	The 12 x 4 synchromesh gearbox has 12 forward and 4 reverse speeds. This is achieved by using a three forward and one reverse gearbox with synchromesh on all gears. This is compounded by a two speed range gearbox to give six speeds which is further doubled by a manual selector lever situated to the right of the drivers console. Reverse is available on all gears.
Number of gears forward	12.
Number of gears reverse	4.
8 x 8 Shuttle gearbox	The 8 x 8 Shuttle gearbox has eight speeds available forward and reverse. This is achieved by using a four speed gearbox compounded by a two speed range gearbox to give eight speeds. A shuttle lever to the left of the steering wheel provides easy forward to reverse gear changing.
Number of gears forward	8.
Number of gears reverse	8.
Range gearbox	The range gearbox is directly bolted to the rear of the main gearbox forming an integral unit. It is fitted with either a two or three speed unit. It also provides the drive to the front four-wheel drive axle.

Rear Axle

Rear axle maximum static load:	
4215 to 4220	4536 kgf (10000 lbf) - Narrow.
4225 to 4245	4536 kgf (10000 lbf) - Normal-duty.
4255 to 4270	5443 kgf (12000 lbf) - Heavy-duty.
Rear track - Pressed steel wheels:	
4215 to 4225	1425-1830 mm (56-72 in) - Narrow.
4225 to 4240	1425-2130 mm (56-84 in) - Normal-duty.
4245 to 4270	1525-2235 mm (60-88 in) - Heavy-duty.
Rear track - Cast centre wheels:	
4225 to 4240	1395-2210 mm (55-87 in) - Normal-duty.
4245 to 4270	1425-2130 mm (56-84 in) - Heavy-duty.
Rear track - PAVT wheels:	
4225 to 4245	1425-1930 mm (56-76 in) - Normal-duty axle.
4255 to 4270	1525-2130 mm (60-84 in) - Heavy-duty axle.
Rear track - PAVT wheels - dual ramp:	
4225 to 4245 and 4263	2030-2130 mm (80-84 in) - Normal-duty.
4260 and 4270	1830-2440 mm (72-96 in) - Heavy-duty.

Brakes

Type	Multi-disc oil immersed.
Model	T.S. brake (Tangential Slave).
Parking brake	Cable operated on both brakes independent of the foot brake.
Brake fluid	Mineral based (Green) - Massey Ferguson part No 3405 389 M1.

Power Take-off

Single-speed PTO:	
540 rev/min PTO speed	1789 engine rev/min.
Economy PTO:	
Standard 540 PTO	1979 engine rev/min.
Economy 540 (540E) PTO	1421 engine rev/min.
Two-speed PTO:	
540 rev/min PTO speed	1902 engine rev/min.
1000 rev/min PTO speed	2000 engine rev/min.

Front mounted PTO:	
Speed	1000 rev/min at 2000 engine rev/min.
Rotation	Counter-clockwise.
Shaft type	540 rev/min type - 6 spline.
540 rev/min PTO shaft:	
No. of splines	6.
Outside diameter	34,93 mm (1.375 in).
1000 rev/min PTO shaft:	
No. of splines	21.
Outside diameter	34,93 mm (1.375 in).

Steering

Type	Hydrostatic power steering.
Pump	Transmission mounted gear pump drawing oil from the transmission case.
Turns lock to lock	4
Steering wheel	Tilt adjustable.

Front Axle - Two-wheel Drive

Type	Three section with telescopic outer arms.
4215 to 4225	Normal-duty.
4225 to 4255	Heavy-duty.
4243 to 4270	Extra heavy-duty.
4233 to 4270	Wide row crop.
Front track settings:	
Normal-duty	1245-1855 mm (49-73 in).
Heavy-duty and extra heavy-duty	1315-1820 mm (52-72 in).
Wide row crop	1830-2335 mm (72-96 in).
Static load:	
Normal-duty axles	2600 kgf (5732 lbf).
Heavy-duty axles	3460 kgf (7628 lbf).
Extra heavy-duty axles	4360 kgf (9612 lbf).
Front Wheel tow-in	0-5 mm (0-3/16 in) at wheel rim.
Turning circles - less brakes:	
4215 and 4220	6,8 metre (268 in).
4225 to 4255	8,0 metre (315 in).
4260 and 4270	9,5 metre (374 in).

Front Axle - Four-wheel Drive

Type ..... Centre drive, hydraulically engaged with Hydralock differential.

Tractor model:	Axle model - all centre drive	Width across hub flanges	Maximum static load
4215, 4220, 4225, 4233, 4235	AG 66 Narrow	1366 mm (53.82 in)	3000 kgf (6614 lbf)
4225, 4233, 4235	AG 66 Wide	1562 mm (61.54 in)	3000 kgf (6614 lbf)
4225 to 4263	AG 75	1669 mm (65.76 in)	4500 kgf (9921 lbf)
4225 to 4263	AG 85	1669 mm (65.76 in)	4500 kgf (9921 lbf)
4255, 4260, 4270	AG 105	1800 mm (70.92 in)	5000 kgf (11023 lbf)

Toe-in	0-4 mm (0-5/32 in).
Maximum turning angle	55°.

Tractor Specification

Turning circles -less brakes:	
4215 and 4220	7,8 metre (307 in).
4225 to 4255	8,0 metre (315 in).
4260 and 4270	9,2 metre (362 in).
Front track settings:	
AG 66 narrow front axle	1423-1624 mm (56 in-64 in).
AG 66 wide front axle	1412-1820 mm (56 in-72 in).
AG 75 or AG 85 front axle	1407-1908 mm (55 in-75 in).
AG 105 front axle on 24 inch wheels	1557-2058 mm (61 in-81 in).
AG 105 front axle on 28 inch wheels	1451-2058 mm (57 in-81 in).

Wheel - Rim Nut and Bolt Torques

Front axle - two-wheel drive bolts	95 Nm (70 lbf ft).
Front axle - Four-wheel drive:	
Wheel nuts	270 Nm (200 lbf ft).
Rim to disc nuts	190 Nm (140 lbf ft).
Rear Wheels - Pressed steel:	
Wheel nuts	325 Nm (240 lbf ft).
Rim to disc nuts	240 Nm (177 lbf ft).
Rear wheels - Cast centre:	
Wheel nuts	325 Nm (240 lbf ft).
Rim clamp nuts (PAVT)	260 Nm (192 lbf ft).

Electrical System - 12 volt:

Battery:

Double battery installation	Type 372.	
Single battery installation	Type 665.	
	Type 372.	Type 665.
SAE rating	590A.	810A.
IEC rating	390A.	545A.
DIN rating	350A.	490A.
Ampere hour	120.	70.
Reserve capacity	110 min.	220 min.

Starter motor:

Type	Solenoid engaged pinion, safety start device operated by the gear shift lever and on the PTO.
Size	2,2 Kw.

Alternator:

	Cab tractor	Footstep tractor
Type	A127-70.	A127-45.
Size	70 amp.	45 amp.
Regulating voltage	14.2 volt.	14.2 volt

Light bulb sizes and part No.:

Head light	R2. - 45/40 W - Continental (white) - 961 866 M1.
Upper head light (Germany only)	H4. - 60/55 W - Halogen - 3713 341 M1.
Work light	H3. 55 W - Halogen - 1628 494 M1.
Side light	R. 5 W - Single contact - 1420 037 M1.
Stop and rear red light	P. 21/5 W - Double contact index - 908 543 M1.
Hazard and direction indicator light	P. 21 W - Single contact - 621 235 M1.
Number plate light	C. 5 W - Festoon - 621 234 M1.
Interior light	SV. 8.5 10 W - Festoon - 3385 821 M1.
Instrument panel lights	1,2 W - Capless - 3405 185 M1.
Instrument panel lights	2,0 W - Capless with holder - 3901 628 M91.
Rotating beacon	55 W - Halogen H1 - 3405 180 M1.

Fuses - Continental blade type:

Size and colour	2 amp (clear), 5 amp (tan), 7,5 amp (brown), 10 amp (red), 15 amp (blue), 20 amp (yellow), 25 amp (natural white), 30 amp (green).

Lift Hydraulics

Hydraulic pump - Ferguson:	
Model	Mk. 3.
Type	Four cylinder, scotch yoke, driven from the PTO drive line.
Output at 2200 engine rev/min at normal working pressure:	
540 rev/min PTO (single speed)	17 litre/min (3.7 gal/min)(4.5 US gal/min).
540/540E rev/min PTO	22 litre/min (4.8 gal/min)(5.8 US gal/min).
540/1000 rev/min PTO	28 litre/min (6.2 gal/min)(7.4 US gal/min).
Pressure relief valve setting	227 bar (3292 lbf/in²).
Hydraulic pump - Electronic Lift Control:	
Type	Single element open type, transmission mounted.
Drive	Chain drive from PTO clutch housing.
Maximum pump flow 2200 rev/min at normal working pressure:	
Output	28 litre/min (6.2 gal/min)(7.4 US gal/min).
Maximum pressure	227 bar (3292 lbf/in²).

Auxiliary Hydraulics

Pump Type	Dual element gear type, transmission mounted.
Make	Sunstrand.
Drive	Chain drive from PTO clutch housing.
Maximum pump flow at 2200 engine rev/min at normal working pressure:	
Output	38 litre/min (8.4 gal/min)(10.0 US gal/min).
Maximum pressure	210 bar (3046 lbf/in²).
Oil strainer:	
Type	100 micron washable.
Location	Right-hand side of rear axle housing.
Oil Filter:	
Type	Centrifugal washable.
Location	Manifold block, right-hand side of rear axle housing.
Auxiliary hydraulic control valves:	
Type	Open centre.
Number of sections	1, 2, 3 or 4.
Type of sections available	Spring return to neutral (standard World-wide).
Optional	Detented with pressure kick-out. Detent with kickout plus float (standard North-America). Motor.
Combined Flow at quick release coupling at 2200 engine rev/min:	
Combined flow 540 PTO (single speed)	55 litre/min (12.1 gal/min)(14.5 US gal/min).
Combined flow 540/540E PTO	60 litre/min (13.2 gal/min)(15.8 US gal/min).
Combined flow 540/1000 PTO	66 litre/min (14.5 gal/min)(17.4 US gal/min).
Pressure at quick release coupling with combined flow at 2200 engine rev/min	210 bar (3046 lbf/in²) maximum.
Trailer brake valve:	
Make	Bosch.
Ratio	4:1.
Piston diameter	12 mm.
Maximum pressure to brakes	135 bar (1960 lbf/in^2).
Maximum oil flow to trailer brake	15 litre/min (3.3 gal/min)(4 US gal/min).

Drawbars

Standard:	
Maximum static load:	
Normal-duty:	
Inner position	775 kgf (1709 lbf).
Centre position	775 kgf (1709 lbf).
Fully extended position	775 kgf (1709 lbf).

Heavy-duty:	
Inner position	1180 kgf (2601 lbf).
Centre position	1180 kgf (2601 lbf).
Fully extended position	1180 kgf (2601 lbf).
Distance to PTO shaft:	
Inner position	250 mm (10 in).
Centre position	350 mm (14 in).
Fully extended position	400 mm (16 in).
Drawbar face to centre of PTO shaft	200 mm (7.88 in).
Drawbar side swing from centre	221 mm (8.70 in).
Pintle-pin:	
Maximum static load	3000 kgf (6614 lbf).
Drawbar maximum static load	1180 kgf (2601 lbf).
Extended (North America):	
Maximum static load:	
Inner position	1180 kgf (2601 lbf).
Fully extended position	1180 kgf (2601 lbf).
Distance to PTO shaft (selected by PTO shaft):	
Fully extended position - (540 rpm)	350 mm (14 in).
Fully extended position - (1000 rpm)	400 mm (16 in).
Drawbar face to centre of PTO shaft	239 mm (9.4 in).
Drawbar side swing from centre	200 mm (7.9 in).

Pick-up Hitch

Normal-duty:	
Hook:	
Maximum static load	2243 kgf (4945 lbf).
Drawbar - distance to PTO shaft:	
Inner position	350 mm (14 in).
Fully extended position	400 mm (16 in).
Drawbar - maximum static load:	
Inner position	775 kgf (1709 lbf).
Fully extended position	775 kgf (1709 lbf).
Heavy-duty:	
Hook - maximum static load:	
Inner position	3058 kgf (6742 lbf).
Centre position	1180 kgf (2601 lbf).
Fully extended position	1180 kgf (2601 lbf).
Drawbar - distance to PTO shaft:	
Inner position	250 mm (10 in).
Centre position	350 mm (14 in).
Fully extended position	400 mm (16 in).
Drawbar - maximum static load:	
Inner position	1180 kgf (2601 lbf).
Centre position	1180 kgf (2601 lbf).
Fully extended position	1180 kgf (2601 lbf).

Lift Linkage

Front linkage:	
Type	Hook ends - Category 2.
Lift capacity at link ends:	
Normal-duty	1800 kgf (3968 lbf).
Heavy-duty	2600 kgf (5732 lbf).
Rear linkage:	
Linkage types World-wide:	
4215, 4220, 4225, 4233, 4235, 4245	Interchangeable ball ends - Category 1 and 2.
4225, 4233, 4235, 4245	Normal-duty telescopic - Maximum capacity 3000 kgf (6614 lbf).
4245, 4255, 4260, 4270	Heavy-duty telescopic
4225, 4233, 4235, 4245, 4255, 4260, 4270	Fixed ball ends - Category 2.
4225, 4233, 4235, 4245, 4255, 4260, 4270	Hook ends - Category 2.
4225, 4233, 4235, 4245, 4255, 4260, 4270	Telescopic ends - Category 2.
Linkage types - North America:	
4225, 4233, 4235, 4243, 4245, 4253	Normal-duty telescopic ends - Category 2 - Maximum capacity 3000 kgf (6614 lbf).
4255, 4263, 4270 Tractors	Heavy-duty telescopic ends - Category 2.
Lift capacity at link ends with links horizontal - World-wide:	
4215, 4220	2200 kgf (4850 lbf).
4225, 4233, 4235	2600 kgf (5732 lbf).
4225, 4233, 4235, 4245	3000 kgf (6614 lbf) with 1 x 28 mm assistor cylinder.
4245, 4255, 4260	4000 kgf (8818 lbf) with 2 x 28 mm assistor cylinders.
4270	5000 kgf (11023 lbf) with 2 x 40 mm assistor cylinders.
Lift capacity at link ends with links horizontal - North America:	
4225, 4233, 4235,4243, 4245,4253	2600 kgf (5732 lbf).
4255, 4263	3000 kgf (6614 lbf).
Lift capacity at link ends with assistor cylinders - North America:	
4225, 4233, 4235,4243, 4245,4253	3000 kgf (6614 lbf).
4255, 4263	4000 kgf (8818 lbf).
4270	5000 kgf (11023 lbf).

Air Conditioning System

Refrigerant type	R134a.
Compressor type	SD7H15-7952.
Refrigerant oil type	PAG (SP-20).
Quantity of oil	190 cc (6.43 fl oz) - Total system capacity.
Drive belt deflection	12-15 mm (1/2-5/8 in).
Refrigerant capacity:	
4 Cylinder engines	1400 g (3.1 lb) (494 oz).
6 cylinder engines	1450 g (3.2 lb) (512 oz).

Tractor Specification

Capacities

Fuel tanks Cab tractors:	
Lo-Profile Cab - 4215, 4220, 4225	84 litres (18.5 gal)(22 US gal).
Lo-Profile Cab - 4233, 4235, 4245, 4255	98 litres (22 gal)(26 US gal).
Standard Cab - Hi-Vis - 4233, 4235, 4245, 4255	127 litres (28 gal)(34 US gal).
Standard Cab - 4233, 4235, 4243, 4245, 4255:	
Single tank	127 litres (28 gal)(34 US gal).
Twin tanks	189 litres (42 gal)(50 US gal).
Standard Cab - 4260, 4263, 4270:	
Single tank	143 litres (31 gal)(38 US gal).
Twin tanks	205 litres (45 gal)(54 US gal).
Fuel tanks - Footstep tractors:	
Four cylinder engines - 'Lo Profile' sheet metal:	
Single tank	110 litres (29 US gal).
Four cylinder engines - Standard:	
Single tank	130 litres (34 US gal).
Twin tanks	200 litres (53 US gal).
Six cylinder engines:	
Single tank	130 litres (34 US gal).
Twin tanks	200 litres (53 US gal).
Engine oil:	
Three cylinder engines	5,7 litres (1.3 gal)(1.5 US gal).
Four cylinder engines	6,5 litres (1.4 gal)(1.7 US gal).
Six cylinder engines	13,5 litres (3.0 gal)(3.6 US gal).
Cooling system:	
Three cylinder engines	10,2 litres (2.3 gal)(2.7 US gal).
Four cylinder engines	17,5 litres (3.9 gal)(4.6 US gal).
Six cylinder engines	28,0 litres (6.2 gal)(7.4 US gal).
Transmission/hydraulics:	
Two- and four-wheel drive	50,0 litres (11.0 gal)(13.2 US gal).
Rear axle epicyclic hubs - heavy-duty only - each side	2,9 litres (5 pts)(5 US pts).
Front four-wheel drive axle:	
Oil capacity - epicyclic - each side:	
AG 66	0,8 litre (1.5 pt)(1.5 US pt).
AG 75 and AG 85	1,0 litre (1.8 pt)(1.8 US pt).
AG 105	1,2 litre (2 pt)(2 US pt).
Oil capacity - complete axle:	
AG 66, AG 75, AG 85	5,6 litre (1.2 gal)(1.5 US gal).
AG 105	7,6 litre (1.7 gal)(2 US gal).
Dual screen and rear window washer bottle:	
Capacity	2,5 litre (4 pt)(4 US pt).
Front PTO gearbox:	
Capacity	0,6 litre (1 pt)(1 US pt).

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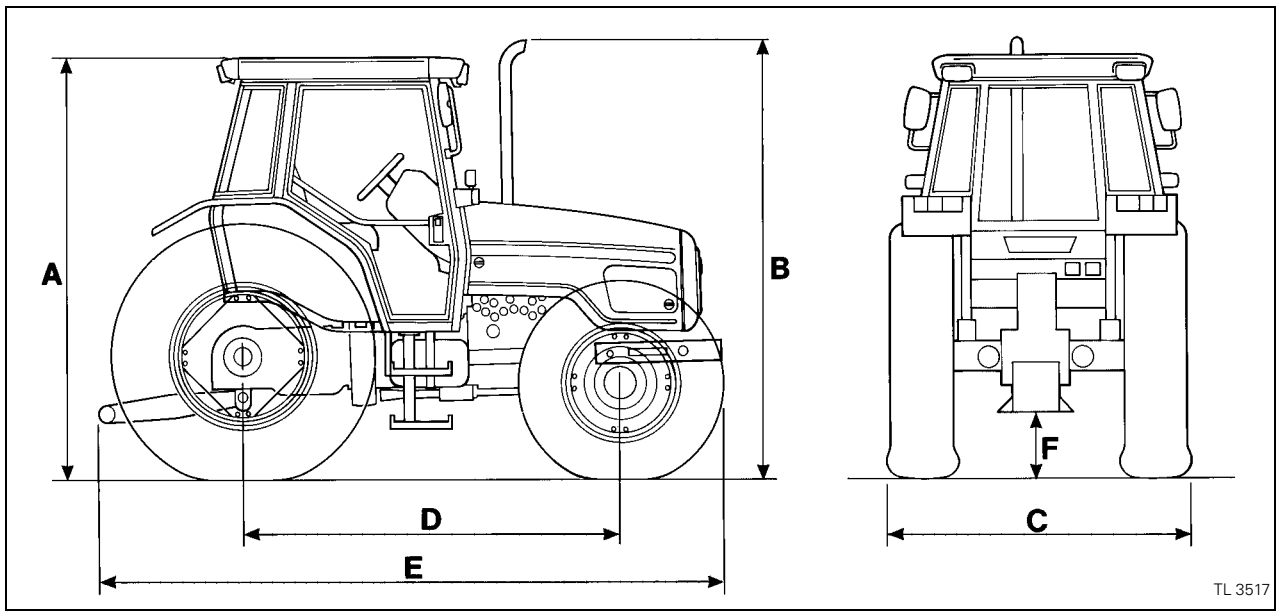
Tractor Specification

TRACTOR DIMENSIONS AND WEIGHTS - CAB TRACTORS



Dimensions - mm (in)

Tractor model	4215	4220	4225	4233/35
Tyre size (rear)	14.9 - 28	14.9 - 28	16.9 - 30	16.9 - 34
Track setting	1525 (60)	1525 (60)	1525 (60)	1525 (60)
A. Overall height:				
Lo-Profile cab, flat roof	2360 (93)	2360 (93)	2365 (93)	–
Lo-Profile cab, standard roof	2450 (97)	2450 (97)	2455 (98)	–
Lo-Profile cab, flat roof	–	–	–	2445 (96)
Lo-Profile cab, standard roof	–	–	–	2535 (100)
Standard cab (flat floor), Hi-Vis, standard roof	–	–	2565 (101)	2615 (103)
Standard cab (flat floor), standard roof	–	–	–	2615 (103)
Standard cab (flat floor), standard roof	–	–	–	–
B. Height over exhaust	30-150 mm (1-6 in) above cab height			
C. Overall width	1900 (75)	1900 (75)	1955 (77)	1955 (77)
D. Wheel base:				
Two-wheel drive - normal-duty axle	2130 (84)	2130 (84)	2190 (86)	2190 (86)
Two-wheel drive - heavy- and extra heavy-duty axle	–	–	2350 (93)	2350 (93)
Four-wheel drive - AG 66 axle	2230 (88)	2230 (88)	2280 (90)	2280 (90)
Four-wheel drive - AG 75, AG 85 or AG 105 axle	-	-	2350 (93)	2350 (93)
E. Overall length:				
Two-wheel drive - without weights	3740 (147)	3740 (147)	3850 (152)	4010 (158)
Two-wheel drive - with weights	4075 (160)	4075 (160)	4185 (165)	4345 (171)
Four-wheel drive - without weights	3860 (152)	3860 (152)	3940 (155)	4050 (160)
Four-wheel drive - with weights	4192 (165)	4192 (165)	4277 (168)	4345 (171)
F. Minimum ground clearance (average)			340 (13)	340 (13)

continued

TRACTOR DIMENSIONS and WEIGHTS - CAB TRACTORS *continued*

Dimensions - mm (in)

Tractor model	4243/4245	4253/4255	4260/4263	4270
Tyre size (rear)	16.9 - 34	16.9 - 34	16.9 - 38	18.4 - 38
Track setting	1625 (64)	1625 (64)	1625 (64)	1625 (64)
A. Overall height:				
Lo-Profile cab, flat roof	--	--	--	--
Lo-Profile cab, standard roof	--	--	--	--
Lo-Profile cab, flat roof	2445 (96)	2445 (96)	--	--
Lo-Profile cab, standard roof	2535 (100)	2535 (100)	--	--
Standard cab (flat floor), Hi-Vis, standard roof	2615 (103)	2640 (104)①	--	--
Standard cab (flat floor), standard roof	2615 (103)	2640 (104)①	--	--
Standard cab (flat floor), standard roof	-	-	2680 (106)	2740 (108)
B. Height over exhaust	30-150 mm (1-6 in) above cab height			
C. Overall width	2055 (81)	2055 (81)	2055 (81)	2095 (82)
D. Wheel base:				
Two-wheel drive - heavy-duty axle	--	--	--	--
Two-wheel drive - heavy- and extra heavy-duty axle	2350 (93)	2350 (93)	2610 (103)	2610 (103)
Four-wheel drive - AG 66 axle	2350 (93)	-	-	-
Four-wheel drive - AG 75, AG 85 or AG 105 axle	2280 (90)	2350 (93)	2610 (103)	2610 (103)
E. Overall length:				
Two-wheel drive - without weights	4010 (158)	4010 (158)	4322 (170)	4322 (170)
Two-wheel drive - with weights	4345 (171)	4345 (171)	4655 (183)	4655 (183)
Four-wheel drive - without weights	4050 (160)	4100 (161)	4412 (174)	4450 (175)
Four-wheel drive - with weights	4345 (171)	4345 (171)	4655 (183)	4655 (183)
F. Minimum ground clearance (average)	340 (13)	390 (15)	390 (15)	405 (16)

NOTE: *The word 'Hi-Vis' refers to the High Visibility type hood with small radiator grille.*

The weights and dimensions can vary, depending on the specification of tyres, optional equipment, size of fuel tank etc. The dimensions and weights quoted are based on a tractor with the most common build and tyre size, therefore a slight variation may be found between these figures and your tractor.

① on 16.9 - 38 tyres.

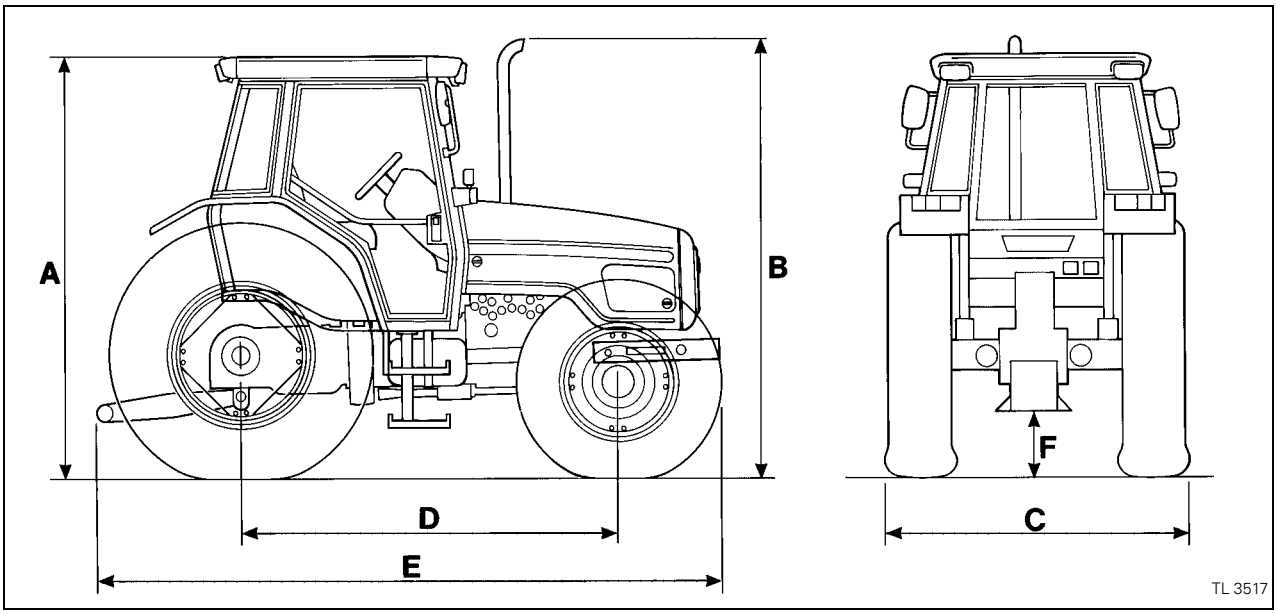
Weights - kg (lb)

Tractor model - Four-wheel drive	4215	4220	4225	4233, 4235
Front axle	1234 (2720)	1234 (2720)	1396 (3078)	1506 (3320)
Rear axle	1750 (3858)	1750 (3858)	2000 (4409)	2200 (4850)
Total	2984 (6579)	2984 (6579)	3396 (7497)	3706 (8170)
Tractor model - Four-wheel drive	4243, 4245	4253, 4255	4260, 4263	4270
Front axle	1533 (3380)	1533 (3380)	1700 (3748)	1700 (3748)
Rear axle	2226 (4907)	2226 (4907)	2421 (5337)	2421 (5337)
Total	3759 (8287)	3759 (8287)	4121 (9085)	4121 (9085)

Tractor model - Two-wheel drive	4215	4220	4225	4233, 4235
Front axle	1020 (2249)	1020 (2249)	1146 (2526)	1256 (2769)
Rear axle	1750 (3858)	1750 (3858)	2000 (4409)	2200 (4850)
Total	2730 (6019)	2730 (6019)	3146 (6936)	3456 (7619)
Tractor model - Two-wheel drive	4243, 4245	4253, 4255	4260, 4263	4270
Front axle	1283 (2829)	1283 (2828)	1450 (3197)	1450 (3197)
Rear axle	2226 (4907)	2226 (4907)	2421 (5337)	2421 (5337)
Total	3509 (7736)	3509 (7736)	3871 (8534)	3871 (8534)

Tractor Specification

TRACTOR DIMENSIONS AND WEIGHTS - NAO CAB TRACTORS



Dimensions - mm (in)

Tractor model	4225	4233/35	4243/45
Tire size (rear)'	16.9 - 30	16.9 - 30	18.4 - 30
Track setting	1525 (60)	1525 (60)	1625 (64)
A. Overall height:			
Lo-Profile cab, standard roof	2446 (96)	2446 (96)	2469 (97)
Standard cab (flat floor), standard roof	2526 (100)	2526 (100)	2549 (100)
B. Height over exhaust	30-150 mm (1-6 in) above cab height		
C. Overall width	1955 (77)	1955 (77)	2055 (81)
D. Wheel base:			
Two-wheel drive	2350 (93)	2350 (93)	2350 (93)
Four-wheel drive	2350 (93)	2350 (93)	2350 (93)
E. Overall length:			
Two-wheel drive - without weights	3850 (152)	4010 (158)	4010 (158)
Two-wheel drive - with weights	4185 (165)	4345 (171)	4345 (171)
Four-wheel drive - without weights	3940 (155)	4050 (160)	4050 (160)
Four-wheel drive - with weights	4277 (168)	4345 (171)	4345 (171)
F. Minimum ground clearance (average)	343 (14)	343 (14)	366 (14)

continued

TRACTOR DIMENSIONS AND WEIGHTS - NAO CAB TRACTORS CONTINUED

Dimensions - mm (in)

Tractor model	4253/55	4263	4270
Tire size (rear)	18.4 - 30	18.4 - 34	18.4 - 38
Track setting	1625 (64)	1625 (64)	1625 (64)
A. Overall height:			
Lo-Profile cab, standard roof	2469 (97)	–	–
Standard cab (flat floor), standard roof	2549 (100)	2640 (104)	2690 (106)
B. Height over exhaust	30-150 mm (1-6 in) above cab height		
C. Overall width	2055 (81)	2055 (81)	2095 (82)
D. Wheel base:			
Two-wheel drive	2350 (93)	2610 (103)	2610 (103)
Four-wheel drive	2350 (93)	2610 (103)	2610 (103)
E. Overall length:			
Two-wheel drive - without weights	4010 (158)	4322 (170)	4322 (170)
Two-wheel drive - with weights	4345 (171)	4655 (183)	4655 (183)
Four-wheel drive - without weights	4100 (161)	4412 (174)	4450 (175)
Four-wheel drive - with weights	4345 (171)	4655 (183)	4655 (183)
F. Minimum ground clearance (average)	366 (14)	417 (16)	467 (18)

NOTE: *The word 'Hi-Vis' refers to the High Visibility type hood with small radiator grille.*

The weights and dimensions can vary, depending on the specification of tires, optional equipment, size of fuel tank etc. The dimensions and weights quoted are based on a tractor with the most common build and tire size, therefore a slight variation may be found between these figures and your tractor.

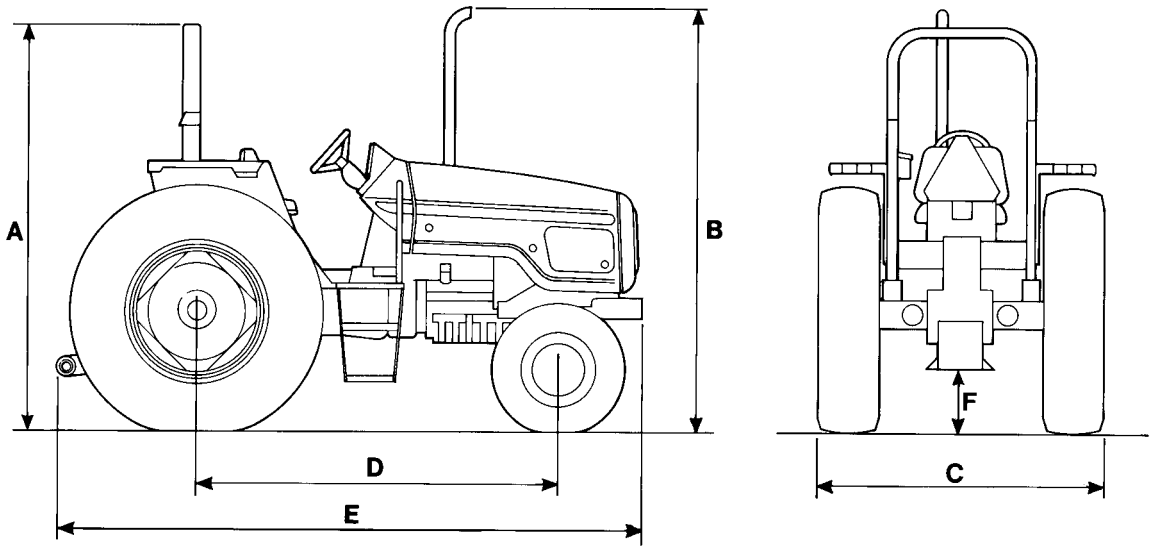
Weights - kg (lb)

Tractor model - Four-wheel drive only	4225	4233/35	4243/45	4253/55	4263	4270
Front axle	1396 (3078)	1396 (3078)	1533 (3380)	1533 (3380)	1700 (3748)	1700 (3748)
Rear axle'	2000 (4409)	2000 (4409)	2226 (4907)	2226 (4907)	2421 (5337)	2421 (5337)
Total	3396 (7497)	3396 (7497)	3759 (8287)	3759 (8287)	4121 (9085)	4121 (9085)

Tractor model - Two-wheel drive only	4225	4233/35	4243/45	4253/55	4260/63	4270
Front axle	1146 (2526)	1256 (2769)	1283 (2828)	1283 (2828)	1450 (3197)	1450 (3197)
Rear axle'	2000 (4409)	2200 (4850)	2226 (4907)	2226 (4907)	2421 (5337)	2421 (5337)
Total'	3146 (6936)	3456 (7619)	3509 (7736)	3509 (7736)	3871 (8534)	3871 (8534)

Tractor Specification

TRACTOR DIMENSIONS AND WEIGHTS - FOOTSTEP TRACTORS



Dimensions - mm (in)

Tractor model	4 cylinder normal-duty	4 cylinder heavy-duty	6 cylinder normal-duty	6 cylinder heavy-duty
Tire size (rear)	16.9 - 30	16.9 - 34	18.4 - 30	18.4 - 38
Track setting	1640 (64)	1760 (68)	1640 (64)	1740 (68)
A.Height over ROPS	2610 (103)	2657 (104)	2690 (106)	2791 (110)
B.Height over exhaust	2630 (104)	2677 (105)	2740 (108)	2841 (112)
C.Overall width	2090 (82)	2100 (83)	2118 (83)	2220 (87)
D.Wheel base:				
Two-wheel drive	2350 (93)	2350 (93)	2610 (103)	2610 (103)
Four-wheel drive axle	2350 (93)	2350 (93)	2610 (103)	2610 (103)
E.Overall length:				
Two-wheel drive	3960 (156)	3960 (156)	4250 (167)	4250 (167)
Four-wheel drive axle	3960 (156)	3960 (156)	4250 (167)	4250 (167)
F. Minimum ground clearance (average)	340 (13)	340 (13)	400 (16)	400 (16)

The weights and dimensions can vary, depending on the specification of tires, optional equipment, size of fuel tank etc. The dimensions and weights quoted are based on a tractor with the most common build and tire size, therefore a slight variation may be found between these figures and your tractor.

Weights - kg (lb)

Tractor model - Two-wheel drive only	4 cylinder normal-duty	4 cylinder heavy-duty	6 cylinder normal-duty	6 cylinder heavy-duty
Front axle	1130 (2486)	1130 (2486)	1357(2992)	1357 (2992)
Rear axle	1750 (3850)	1763 (3879)	1528 (3369)	1541 (3397)
Total	2810 (6182)	2823 (6211)	3563 (7855)	3576 (7884)

Tractor model - Four-wheel drive only	4 cylinder normal-duty	4 cylinder heavy-duty	6 cylinder normal-duty	6 cylinder heavy-duty
Front axle	1390 (3058)	1390 (3058)	1560 (3439)	1560 (3439)
Rear axle	1950 (3900)	1963 (3926)	2127 (4689)	2140 (4718)
Total	3260 (6520)	3273 (6546)	3607 (7952)	3620 (7981)

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TRACTOR MOUNTING POINTS

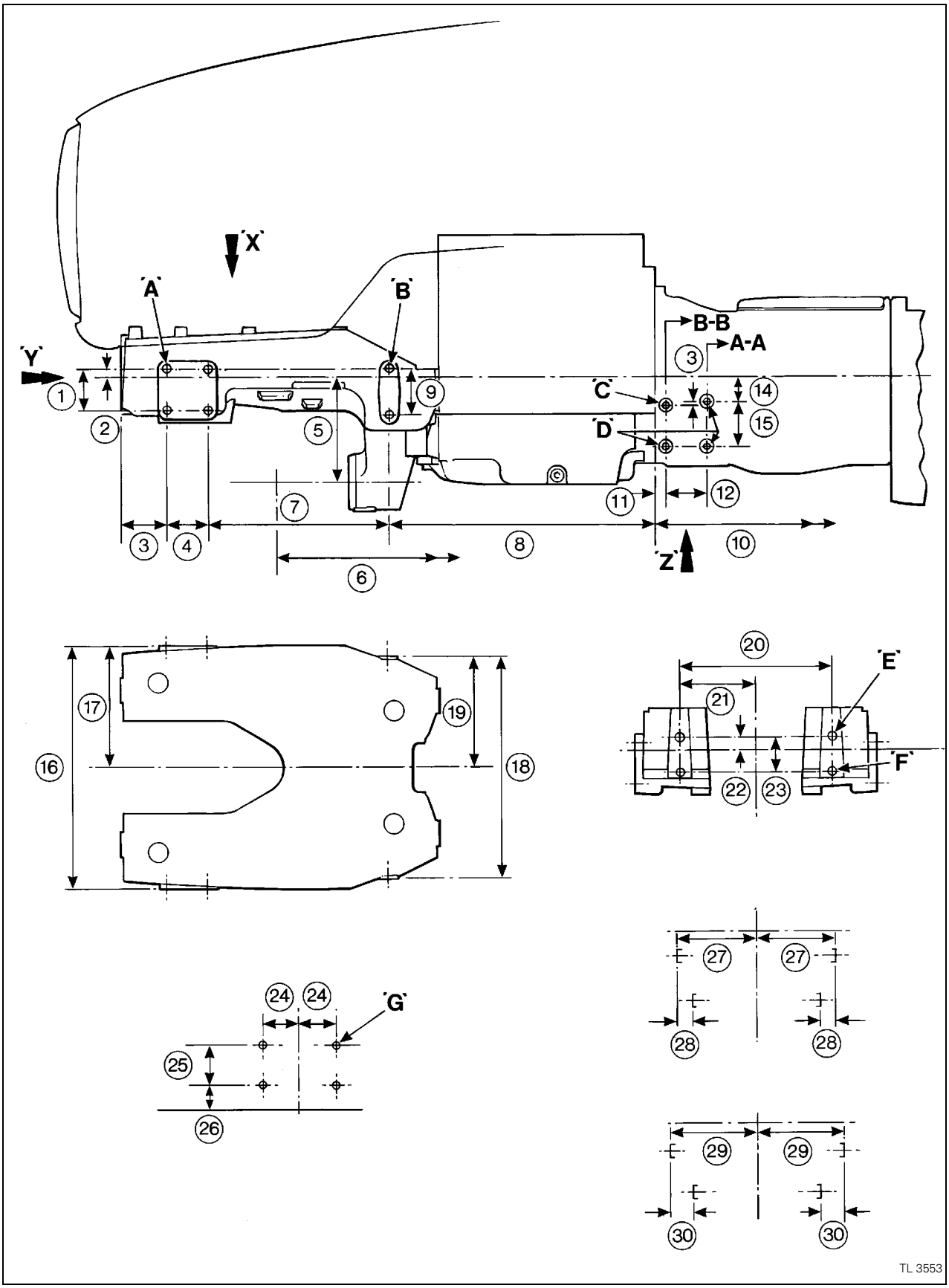


Fig. 1 Tractor front mounting points

MOUNTING POINTS

Refer to Fig. 1 and Fig. 2.

Tractor Front (Fig. 1):

1. 101,6 mm (4 in).
2. 20 mm (0.788 in).
3. 60,4 mm (2.364 in) high visibility hood.
   115,4 mm (4.547 in) standard hood.
4. 101.6 mm (4 in).
5. 260 mm (10.244 in).

Wheelbase two-wheel drive:

6. 2133 mm (84.040 in) 3 cylinder engine tractor.
   2187 mm (86.168 in) 4 cylinder engine tractor *(see Note 1).*
   2350 mm (92.590 in) 4 cylinder engine tractor.
   2609 mm (102.795 in) 6 cylinder engine tractor.

Note 1: Tractors fitted with light weight front axle.

Wheelbase four-wheel drive:

2227 mm (87.744 in) 3 cylinder engine tractor.
2281 mm (89.871 in) 4 cylinder engine tractor *(see Note 2).*
2350 mm (92.590 in) 4 cylinder engine tractor *(see Note 3).*
2609 mm (102.795 in) 6 cylinder engine tractor.

Note 2: Tractors fitted with AG 66 type axle

Note 3: Tractors fitted with AG 75, 85 or 105 type axles.

7. 448 mm (17.651 in).
8. 612 mm (24.113 in) 3 cylinder engine tractor.
   664,75 mm (26.191 in) 4 cylinder engine tractor.
   908,22 mm (35.784 in) 6 cylinder engine tractor.
9. 114 mm (4.492 in).
10. 1406 mm (55.396 in) - to centre of rear axle.
11. 25.4 mm (1 in).
12. 101.6 mm (4 in).
13. 9,65 mm (0.380 in).
14. 60,45 mm (2.382 in).
15. 111,25 mm (4.383 in).

View arrow 'X':

16.600 mm (23.640 in).
17.300 mm (11.820 in).
18.550 mm (21.670 in).
19.275 mm (10.835 in).

View arrow 'Y':

20. 381 mm (15.011 in).
21. 190 mm (7.486 in).
22. 31,87 mm (1.256 in).
23. 86 mm (3.388 in).

View arrow 'Z':

24. 91,95 mm (3.623 in).
25. 101,6 mm (4 in).
26. 60,2 mm (2.372 in).

Section 'AA':

27. 197,61-196,09 mm (7.786-7.765 in).
28. 39,62-36,58 mm (1.561-1.441 in).

Section 'BB':

29. 216,28-215,52 mm (8.521-8.491 in).
30. 57,53-56,77 mm (2.267-2.238 in).

Hole sizes:

A. 4 holes M20 - 2,5 x 38 mm deep.
B. 2 holes M20 - 2,5 x 38 mm deep.
C. 1 hole 5/8 in - 11 UNC x 23,8 mm deep.
D. 3 holes 5/8 in - 11 UNC x 31,8 mm deep.
E. 2 holes 22,33/22,00 (0.867 in) diameter through.
F. 2 holes M20 - 2,5 through.
G. 4 holes 5/8 in - 11 UNC x 31,7 mm deep.

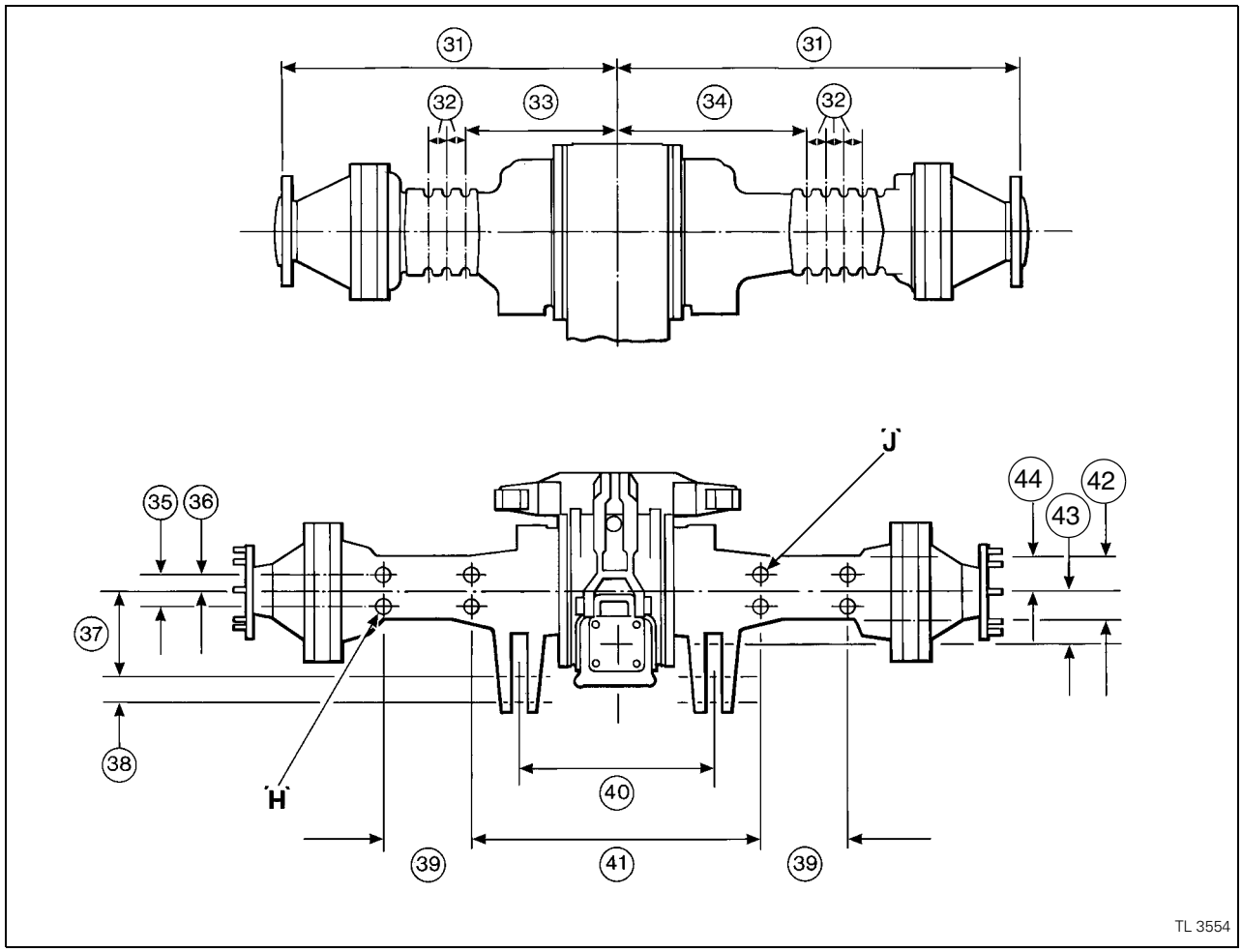


Fig. 2 Rear axle mounting points

Rear axle (Fig. 2):

31. 734 mm (28.20 in) narrow axle.
    885,5 mm (34.889 in) normal-duty axle.
    936,5 mm (36.898 in) heavy-duty axle
32. 41 mm (1.615 in).
33. 345,5 mm (13.613 in) narrow axle.
34. 428 mm (16.863 in) Normal- and heavy-duty axle.
35. 80 mm (3.152 in).
36. 40,8 mm (1.607 in).
37. 212,5 mm (8.373 in).
38. 67 mm (2.640 in) heavy-duty axle only.
39. 220 mm (8.668 in).
40. 492 mm (19.370 in).
41. 726 mm (28.580 in).
42. 161.5 mm (6.363 in).
43. 127 mm (5 in).
44. 90,2 mm (3.554 in).

Hole sizes:

H. 4 holes 5/8" - 11 UNC x 28 mm deep.

J. 4 holes 5/8" - 11 UNC x 30 mm deep.

TRACTOR IDENTIFICATION

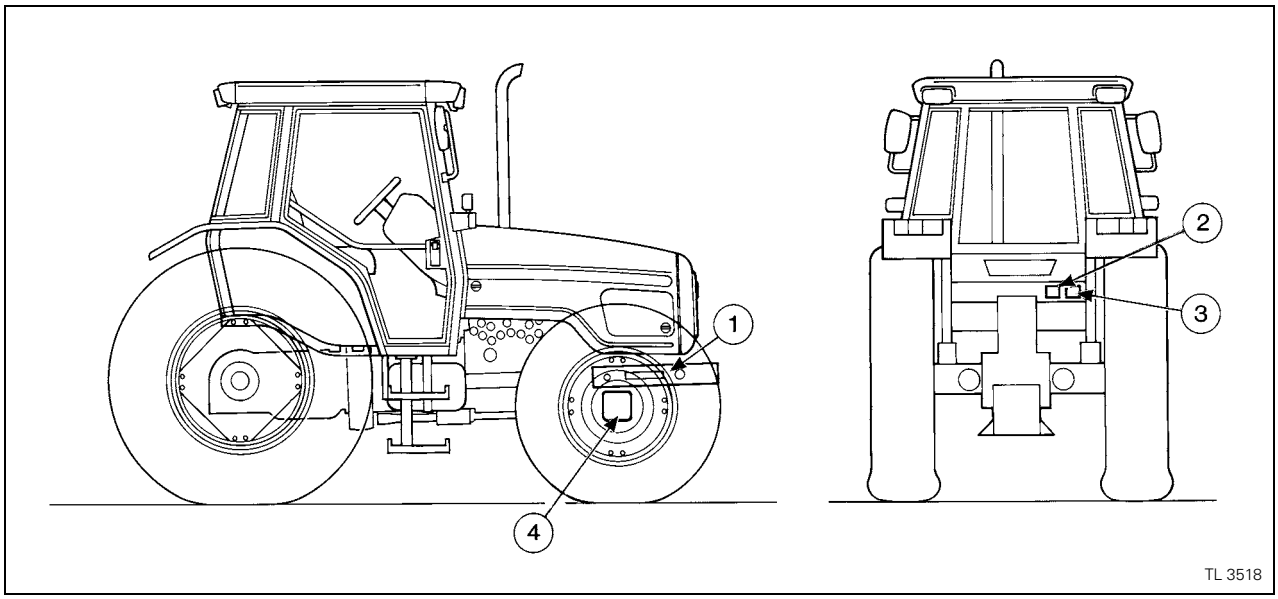


Fig. 3

SERIAL NUMBERS - TRACTOR

The serial number of the tractor forms a very important part in the identification of the tractor, when it was made and the components included in its build. The serial number MUST always be quoted when communicating with Massey Ferguson or the Dealer.

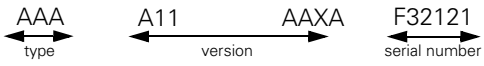
The location of serial numbers and serial number plates are shown in Fig. 3. The serial number is stamped on the right-hand side of the front support casting (1 Fig. 3) and detailed in Fig. 4. This information is repeated on a serial number plate located on the rear of the tractor (2 Fig. 3), and detailed in Fig. 5.

The cab compliance and serial number plate is located at the rear of the cab (3 Fig. 3). The front four-wheel drive axle serial number plate is fixed to the rear right-hand side of the axle (4 Fig. 3), and detailed in Fig. 7.

The tractors are numbered systematically and the number gives information on machine build, engine, transmission, when it was built and year of manufacture.

The serial number information is as follows:

Example:



Legend

Type

A	Family
A or 1	Engine (Directory Identity)
A	Nominal Power (Directory Identity

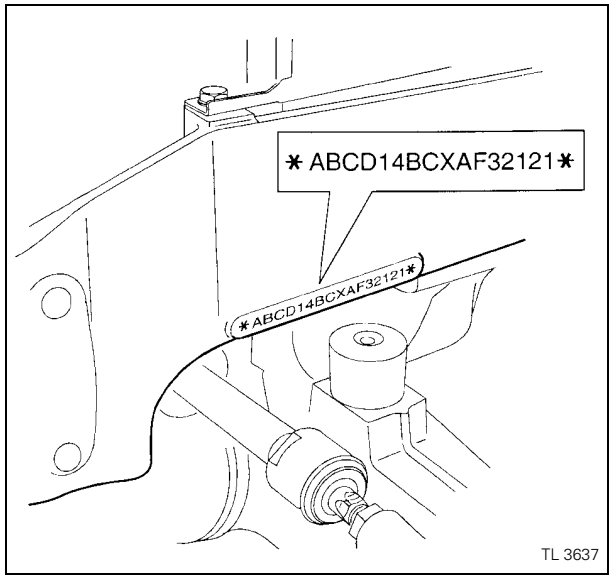


Fig. 4

Version

A	Transmission
1	Notional road speed
1	Driving axles
A	Structure
A	ROPS mounts
X	Free
A	Brand

Tractor Specification

Tractor Types Covered in Code

Family (digit 1):

A	Perkins (emissions compliant engine) Standard sheet metal
B	Perkins (non-emissions compliant engine) Standard sheet metal
C	Perkins (emissions compliant engine) Low sheet metal
D	Perkins (non-emissions compliant engine) Low sheet metal
W	Valmet (emissions compliant engine)
1	Cummins (emissions compliant engine)

Engine Directory (digit 2):

A	3 cylinder
B	4 cylinder
C	6 cylinder

Power Directory (digits 2 and 3):

AA	3 cylinder 52 DIN
AB	3 cylinder 60 DIN
BA	4 cylinder 65 DIN
BB	4 cylinder 75 DIN
BC	4 cylinder 85 DIN
BD	4 cylinder 105 DIN
BE	4 cylinder 95 DIN
BF	4 cylinder 80 DIN
BG	4 cylinder 70 DIN
BH	4 cylinder 100 DIN
CA	6 cylinder 100 DIN
CB	6 cylinder 110 DIN

Engine Type (digita 1, 2 and 3): 4200 family 'A' emissions complaint standard sheet metal

ABA	Perkins – 4 cylinder 65 DIN
ABB	Perkins – 4 cylinder 75 DIN
ABC	Perkins – 4 cylinder 85 DIN
ABD	Perkins – 4 cylinder 105 DIN
ABE	Perkins – 4 cylinder 95 DIN
ABF	Perkins – 4 cylinder 80 DIN
ACA	Perkins – 6 cylinder 100 DIN
ACB	Perkins – 6 cylinder 110 DIN

Engine Type (digita 1, 2 and 3): 4200 family 'B' non-emissions complaint standard sheet metal

BBA	Perkins – 4 cylinder 65 DIN
BBB	Perkins – 4 cylinder 75 DIN
BBC	Perkins – 4 cylinder 85 DIN
BBD	Perkins – 4 cylinder 105 DIN
BBE	Perkins – 4 cylinder 95 DIN
BBF	Perkins – 4 cylinder 80 DIN
BBH	Perkins – 4 cylinder 100 DIN
BCA	Perkins – 6 cylinder 100 DIN
BCB	Perkins – 6 cylinder 110 DIN

Engine Type (digita 1, 2 and 3): 4200 family 'C' emissions complaint low sheet metal

CAA	Perkins – 3 cylinder 52 DIN
CAB	Perkins – 3 cylinder 60 DIN
CBA	Perkins – 4 cylinder 65 DIN
CBB	Perkins – 4 cylinder 75 DIN
CBC	Perkins – 4 cylinder 85 DIN
CBD	Perkins – 4 cylinder 105 DIN
CBE	Perkins – 4 cylinder 95 DIN

Engine Type (digita 1, 2 and 3): 4200 family 'D' non-emissions complaint low sheet metal

DBA	Perkins – 4 cylinder 65 DIN
DBB	Perkins – 4 cylinder 75 DIN
DBC	Perkins – 4 cylinder 85 DIN
DBE	Perkins – 4 cylinder 95 DIN
DBF	Perkins – 4 cylinder 80 DIN
DBH	Perkins – 4 cylinder 100 DIN

Engine Type (digita 1, 2 and 3): 4200 family 'W' emissions complaint standard sheet metal

WBC	Valmet – 4 cylinder 85 DIN
WBG	Valmet – 4 cylinder 70 DIN
WBH	Valmet – 4 cylinder 100 DIN

Engine Type (digita 1, 2 and 3): 4200 family '1' emissions complaint standard sheet metal

1BC	Cummins - 4 cylinder 85 DIN
1BE	Cummins - 4 cylinder 95 DIN
1BF	Cummins - 4 cylinder 80 DIN
1BG	Cummins - 4 cylinder 70 DIN

Version Available for Each Type of Transmission (digit 4):

A	8 x 2
B	8 x 8
C	12 x 4
D	12 x 12
E	18 x 6
F	24 speed

Notional Road Speed (digit 5):

1	30 kph
2	40 kph
3	35 kph

Drive Axles (digit 6):

1	Two-wheel drive – short wheelbase
2	Two-wheel drive – long wheelbase
3	Four-wheel drive – short wheelbase
4	Four-wheel drive – long wheelbase
5	Four-wheel drive – Portal Axle

Structure (digit 7):

A	CAB – Standard fixed screen (type 5001)
B	CAB – Lo-profile fixed screen (type 5003)
C	CAB – Versa cab (type 5002)
D	CAB – Lo-profile opening screen (type 5004)
E	CAB – Standard opening screen (type 5005)
F	CAB – Orchard (type 5006)
H	ROPS – 4 post, narrow rear axle (type 1800)
J	ROPS – 2 post field-folding, standard rear axle (type 1100)
K	ROPS – 4 post, standard rear axle (type 1900)
L	ROPS – 2 post transport-folding, standard rear axle (type 1101)
M	ROPS – 4 post, standard rear axle (type 1500)
N	ROPS – 4 post extra high, standard rear axle (type 1500 XH)
P	ROPS – 4 post, narrow rear axle (type 1700)
R	ROPS – 2 post field-folding, standard rear axle (type 1200)
X	LESS STRUCTURE

ROPS/Cab Mounts (digit 8):

A	High rear mount, type R21 (6 cylinder, standard rear axle)
B	High rear mount, type R19 (4 cylinder, standard rear axle)
C	Low rear mount, type R17 (4 cylinder, standard rear axle)
D	High rear mount, type R20 (4 cylinder, narrow rear axle)
E	Low rear mount, type R18 (4 cylinder, narrow rear axle)
F	Low rear mount, type R15 (3 cylinder, standard rear axle)
G	Low rear mount, type R16 (3 cylinder, narrow rear axle)
H	2/4 post ROPS (standard rear axle)
J	2/4 post ROPS (narrow rear axle)
K	High rear mount, type R22 (4 cylinder, standard rear axle) – Versa cab
X	Less mounts

Free (digit 9):

X	

Brand (digit 10):

A	Massey Ferguson
C	Massey Ferguson 'ES' (Spain)
E	Iseki
F	Massey Ferguson '3' range (North America)
G	Allis
H	White

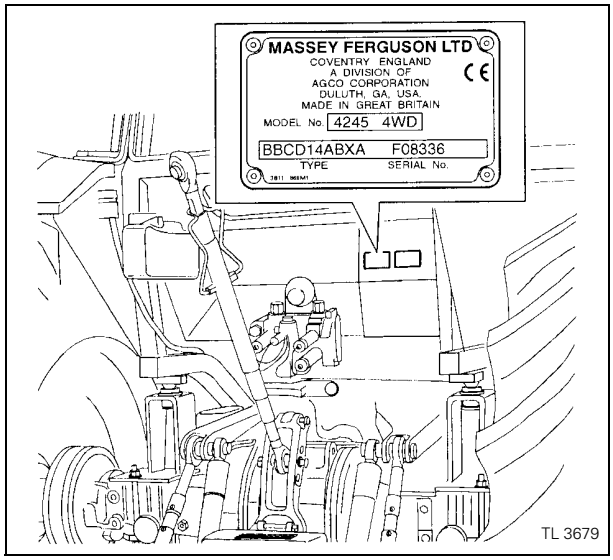


Fig. 5

Year Code Letter (digit 11):

F	1997 – January to December
G	1998 – January to December
H	1999 – January to December
J	2000 – January to December
K	2001 – January to December
L	2002 – January to December
M	2003 – January to December
T	2004 – January to December
W	2005 – January to December
X	2006 – January to December

End of alphabetical sequence.
I, O, Q and Z are not used.

Serial Number (digit 11 to 16):

F	Year of manufacture, see year code letter, (F = 1997 – as above).
32	Week of manufacture, 32nd week (week 1 = 1st week in January).
121	121st tractor built in that week.

SERIAL NUMBERS - ENGINE

The engine numbering system (Fig. 6) consists of up to thirteen letters and numbers giving details of build code, country of origin, serial number and year of manufacture.

AK	Engine family code - 4.401T
31299	Build code
U	Country of manufacture
862894	Engine serial number
C	Year of manufacture

Engine family codes:

Engine	Engine family	Emission
903.27	CP	Low
903.27T	CR	Low
4.41	LM	Normal
4.401	AJ	Low
4.42	AR	Low
4.401T	AK	Low
1004-4THR2	AH	Normal
4.401TW	AM	Low
1006.6	YA	Normal
6.601	YG	Low
1006-6HR3	YA	Normal
6.601T	YH	Low

Country of manufacture:

B	Brazil.
F	France.
L	Italy.
P	Poland.
T	Turkey.
U	United Kingdom.

Year of manufacture:

B = 1996
C = 1997
D = 1998
E = 1st January 1999 to 31st March 1999
F = from 1st April 1999 to 31st December 1999
G = 2000
H = 2001
J = 2002
K = 2003
L = 2004
M = 2005
N = 2006
P = 2007

I, O, Q and Z are not used.
Two year letters are used during 1999, otherwise calendar year is used.

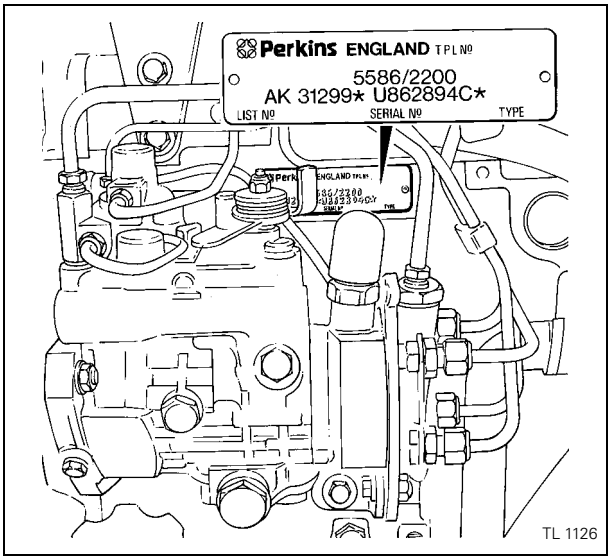


Fig. 6

SERIAL NUMBERS - FRONT AXLE

The serial number plate for the four-wheel drive front axle (Fig. 7) is important, it identifies the model and size of the front axle fitted to the tractor because different axles can be fitted to many tractors. The plate is divided into five sections, each section giving information as follows:

1. Axle

AG 66 CD	Type 66 centre drive - narrow (Short Wheel Base) 4215, 4220, 4225, 4233, 4235, 4245 tractors.
AG 66 CD	Type 66 centre drive - wide (Short Wheel Base) 4225, 4233, 4235 tractors.
AG 66 CD	Type 66 centre drive - portal (Short Wheel Base) 4225, 4233, 4235, 4245 tractors.
AG 75 CD	Type 75 centre drive (Long Wheel Base) 4225, 4233, 4235, 4243 tractors.
AG 85 CD	Type 85 centre drive (Long Wheel Base) 4245, 4253, 4255, 4260, 4263 tractors.
AG 85 CD	Type 85 centre drive - portal (Long Wheel Base) 4255, 4260 tractors.
AG 105 CD	Type 105 centre drive (Long Wheel Base) 4245, 4255, 4260, 4270 tractors.

2. Differential

NS	No-spin (autolock).
ST	Standard (no differential lock).
HY	Hydrolock (hydraulic).

3. Total Ratio

This is the total ratio value of the axle from the input to the wheel.

4. Serial Number

Progressive serial number:

The last two letters of the number refer to the date of build.

The first letter denotes the month:

A	January.
B	February.
C	March.
D	April.
E	May.
F	June.
G	July.
H	August.
I	September.
L	October.
M	November.
N	December.

The second letter denotes the year:

F	1996.
G	1997.
H	1998.
J	1999.
K	2000.

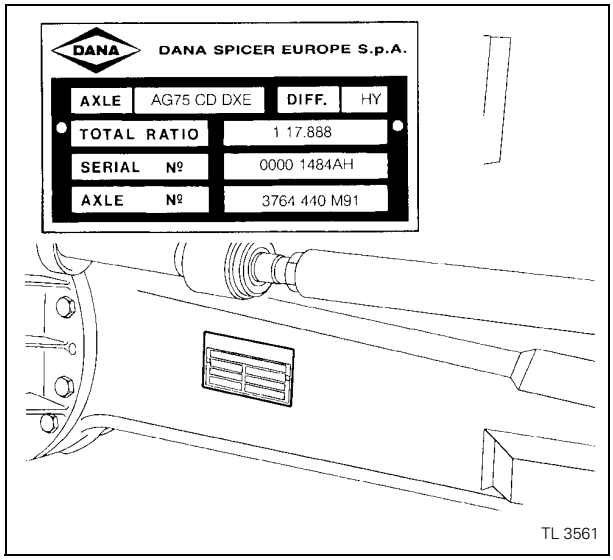


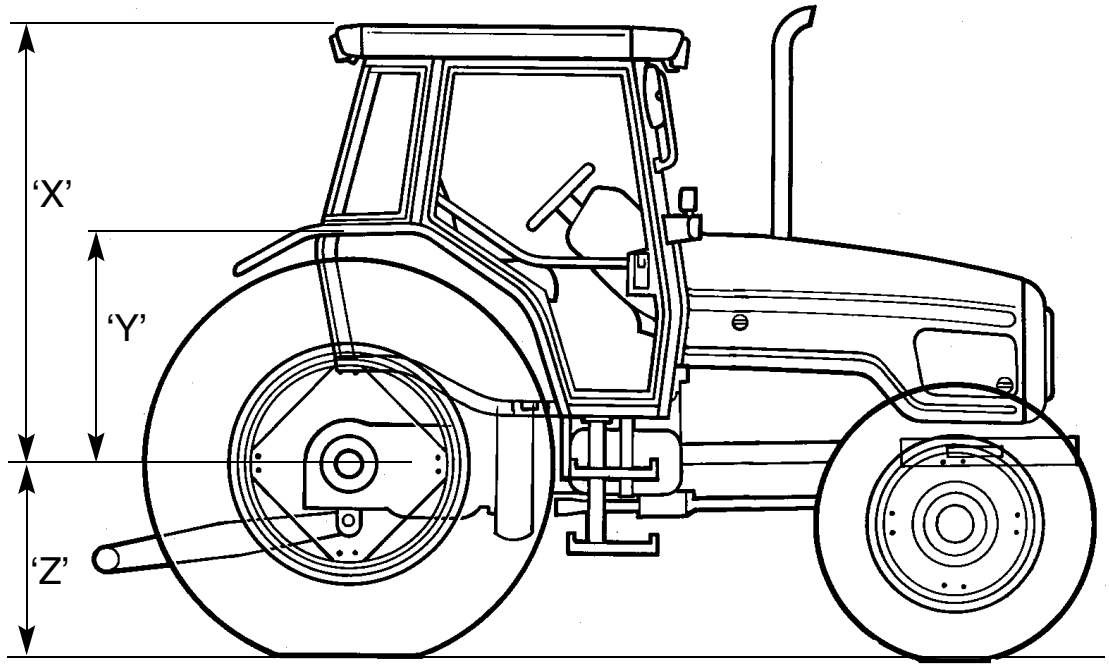
Fig. 7

5. Axle Number

Part numbers of axles:

3808 857 M91	AG 66 - CD - Narrow - Hydralock.
3808 858 M91	AG 66 - CD - Wide - Hydralock.
3808 334 M91	AG 75 - CD - Hydralock.
3808 336 M91	AG 85 - CD - Hydralock.
3808 338 M91	AG105 - CD - Hydralock.

NOTE: *The above part numbers may change.*



TRACTOR IDENTIFICATION AND HEIGHT – CAB TRACTORS

The 4200 series tractors come in various types starting with the 'Standard Tractor'. This has a standard cab with a flat floor and standard roof with the heating and ventilating system installed, the hood is a normal type and size. The cab is set at two heights depending on the model and size of the rear wheels. The basic structure of all the cabs are the same size from the six cylinder down to the three cylinder.

The next type is similar to the first with a sloping hood used for loader and front mounted implement work.

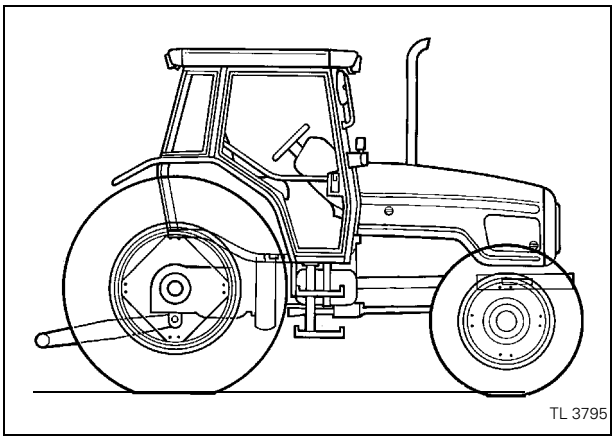
The third type is called 'Lo-Profile', the cab is set lower on the chassis and in the cab there is a tunnel around the transmission. This build only comes with a sloping hood. As an option, it can be fitted with a flat roof which further reduces the overall height of the tractor.

The last and fourth type is for tractors with three cylinder engines, it is only available with the Lo-Profile cab and sloping hood, the cab is set lower for the small wheels. It is also available with a four cylinder engine (4225). These models are available with a standard or flat roof cab for working in low buildings.

The following illustrations show the visual differences between the types of build and the changes in height depending on model and tyre size. The height of cab controls the size of fuel tank fitted.

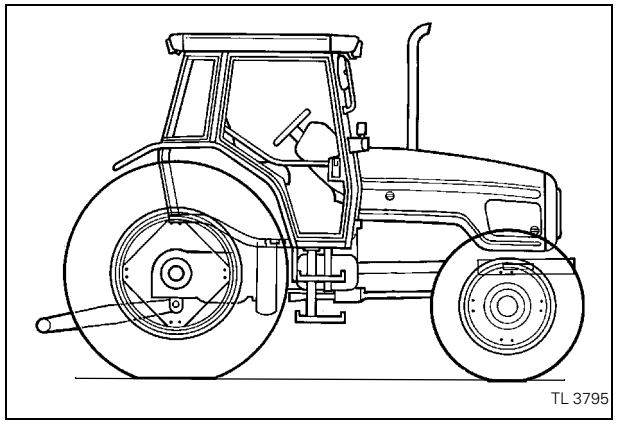
4260, 4263 and 4270 Standard Tractors

6 cylinder engines.
Standard roof.
Standard cab with flat floor.
Standard hood.
Cab height 'X' = 1900 mm.
Mud guard height 'Y' = 990 mm.
'Z' = rolling radius of tyre.
Fuel tank capacity = 205 litres (two tanks).



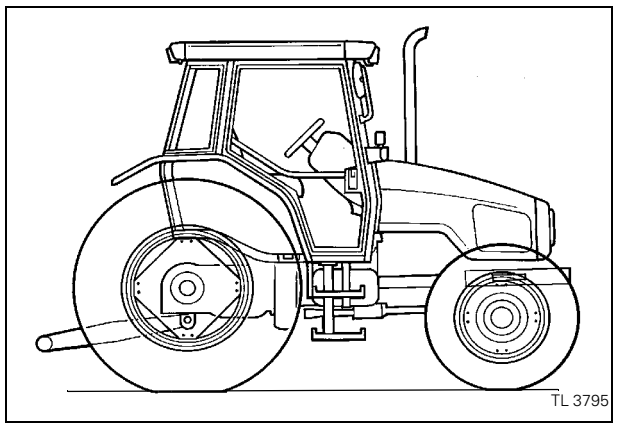
4225, 4233, 4235, 4243, 4245, 4253 and 4255 Standard Tractors

4 cylinder engines.
Standard roof.
Standard cab with flat floor.
Standard hood.
Cab height `X' = 1860 mm.
Mud guard height `Y' = 950 mm
'Z' = rolling radius of tyre.
Fuel tank capacity = 127 litres (single tank).



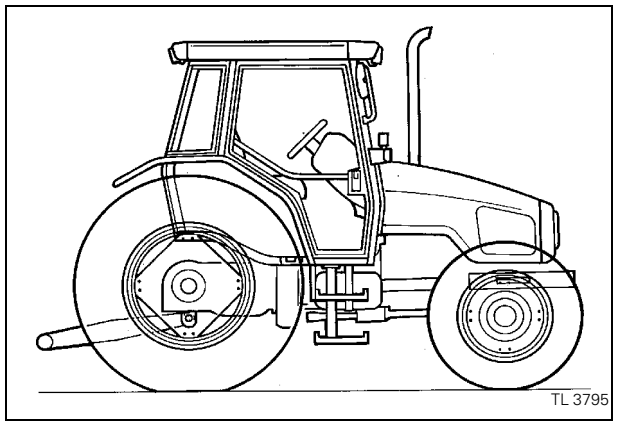
4225, 4233, 4235, 4243, 4245, 4253 and 4255 Standard Tractors

4 cylinder engines.
Standard roof.
Standard cab with flat floor.
Sloping hood.
Cab height 'X' = 1860 mm.
Mud guard height 'Y' = 950 mm.
'Z' = rolling radius of tyre.
Fuel tank capacity = 127 litres (single tank).



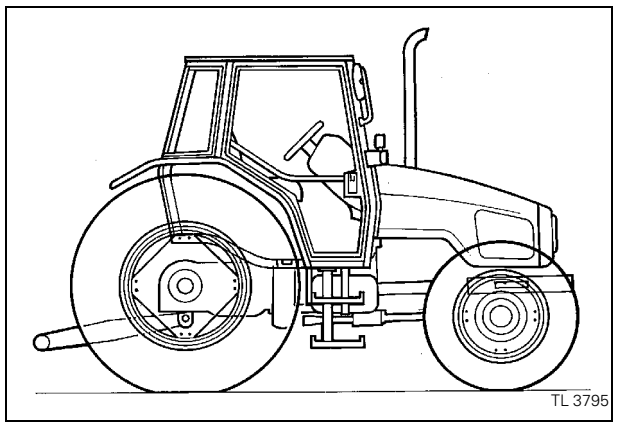
4233, 4235, 4243, 4245, 4253 and 4255 Lo-Profile Tractors

4 cylinder engines.
Standard roof.
Lo-Profile cab with tunnel floor.
Sloping hood.
Cab height 'X' = 1780 mm.
Mud guard height 'Y' = 870 mm.
'Z' = rolling radius of tyre.
Fuel tank capacity = 98 litres (single tank).



4233, 4235, 4245, and 4255 Lo-Profile Tractors

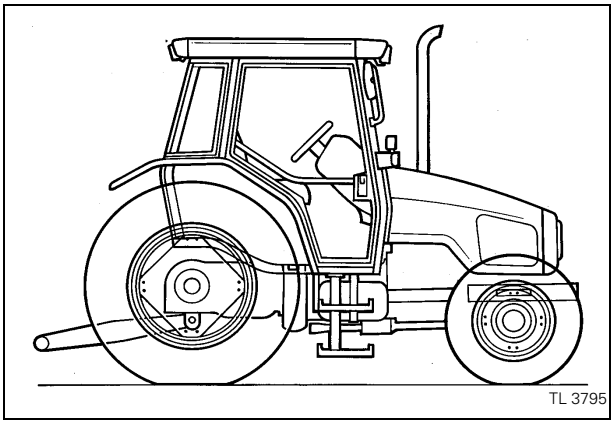
4 cylinder engines.
Flat roof.
Lo-Profile cab with tunnel floor.
Sloping hood.
Cab height 'X' = 1780 mm.
Mud guard height 'Y' = 870 mm.
'Z' = rolling radius of tyre.
Fuel tank capacity = 98 litres (single tank).



Tractor Specification

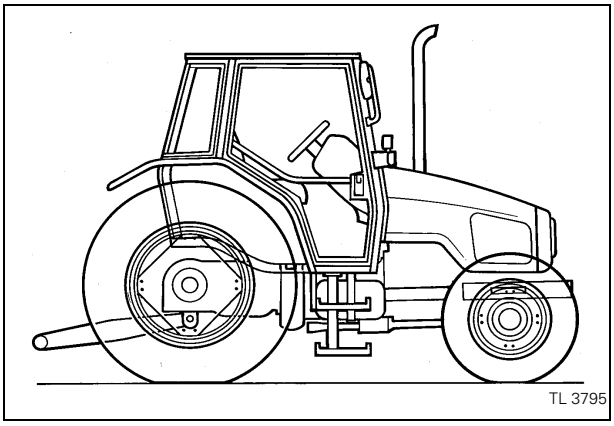
4215, 4220 and 4225 Lo-Profile Tractors

4215, 4220 - 3 cylinder engines.
4225 - 4 cylinder engine.
Standard roof.
Lo-Profile cab with tunnel floor.
Sloping hood.
Cab height 'X' = 1745 mm.
Mud guard height 'Y' = 835 mm.
'Z' = rolling radius of tyre.
Fuel tank capacity = 84 litres.



4215, 4220 and 4225 Lo-Profile Tractors

4215, 4220 - 3 cylinder engines.
4225 - 4 cylinder engine.
Flat roof.
Lo-Profile cab with tunnel floor.
Sloping hood.
Cab height 'X' = 1665 mm.
Mud guard height 'Y' = 835 mm.
'Z' = rolling radius of tyre.
Fuel tank capacity = 84 litres.



Miscellaneous Data

Section 1 - Part C

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Miscellaneous Data

BOLT TORQUE SPECIFICATIONS (GENERAL GUIDE FOR INCH FASTENERS)

Use the "Standard Torque" charts as a general guide when tightening fasteners that DO NOT HAVE SPECIFIC TIGHTENING RECOMMENDATIONS.

Inch Fasteners

Standard torque in Newton Metres (Foot Pounds)

* Inch bolt size	SAE grade 5 **mild steel below grade 5	SAE grade 8 ISO grade 8.8 BS grade S		ISO grade 10.9 BS grade V	
		*** Non-rigid joint	**** Rigid joint	*** Non-rigid joint	**** Rigid joint
1/4 inch	6-8 (4-6)	9-12 (7-9)	11-15 (8-11)	13-18 (10-13)	16-22 (12-16)
5/16 inch	12-16 (9-12)	18-24 (13-18)	22-30 (16-22)	25-34 (18-25)	31-43 (23-32)
3/8 inch	22-30 (16-22)	31-42 (23-31)	39-53 (29-39)	44-60 (32-44)	55-75 (41-55)
7/16 inch	35-47 (26-35)	51-69 (38-51)	64-86 (47-63)	72-96 (53-71)	90-120 (66-89)
1/2 inch	54-72 (40-53)	80-104 (59-77)	100-130 (74-96)	110-140 (81-103)	140-180 (103-133)
5/8 inch	110-140 (81-103)	160-210 (118-155)	200-260 (148-192)	220-300 (162-221)	280-370 (207-273)
3/4 inch	190-250 (140-184)	280-370 (207-273)	350-460 (258-339)	390-530 (287-391)	490-660 (361-487)
7/8 inch	310-410 (228-302)	450-610 (332-450)	560-760 (413-561)	640-850 (472-672)	800-1060 (590-782)
1 inch	460-620 (339-457)	670-900 (494-664)	840-1120 (620-826)	960-1280 (708-944)	1200-1600 (885-1180)

Key to table above:

* *NOTE: The size is the diameter of the shank - not the head width.*

** *NOTE: Mild steel torque values to be used for SAE Grade 5 bolts when weld nuts, or other low strength nuts are used.*

*** *NOTE: Use these values when any of the following conditions exist:*
1. Possible damage to the joined members of the assembly may occur.
2. Thick and/or highly compressible gaskets are used between members.
3. Non-flat unmachined seating surfaces for bolt head (or nut) occurs.
4. Non-flat or non-parallel joint faces are encountered.

**** *NOTE: Use these values when ALL of the following conditions exist:*
1. Damage will not occur to the joined members of the assembly.
2. It is desirable to use this higher clamping force to ensure tightness.
3. Fastener thread is not lubricated prior to assembly.

BOLT TORQUE SPECIFICATIONS (GENERAL GUIDE FOR METRIC FASTENERS)

Use the "Standard Torque" charts as a general guide when tightening fasteners that DO NOT HAVE SPECIFIC TIGHTENING RECOMMENDATIONS

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Metric Fasteners Standard torque in Newton Metres (Foot Pounds)					
* Metric bolt size	SAE grade 5 ** mild steel below grade 5	SAE grade 8 ISO grade 8.8 BS grade S		ISO grade 10.9 BS grade V	
		*** Non-rigid joint	**** Rigid joint	*** Non-rigid joint	**** Rigid joint
M6	4-5 (3-4)	8-11 (6-8)	10-14 (7-10)	12-16 (9-12)	14-20 (10-15)
M8	10-13 (7-10)	20-28 (15-21)	25-35 (18-26)	29-37 (21-27)	36-46 (27-34)
M10	19-25 (14-18)	40-56 (30-41)	50-70 (37-52)	57-77 (42-57)	72-96 (53-71)
M12	33-43 (24-32)	72-96 (53-71)	90-120 (66-89)	100-130 (74-96)	120-160 (89-118)
M16	84-110 (62-81)	160-210 (118-155)	200-260 (148-192)	240-320 (177-236)	300-400 (221-295)
M20	160-210 (118-155)	340-450 (251-332)	420-560 (310-413)	480-640 (354-472)	600-800 (443-590)

Key to table above:

* *NOTE: The size is the diameter of the shank - not the head width.*

** *NOTE: Mild steel torque values to be used for SAE Grade 5 bolts when weld nuts, or other low strength nuts are used.*

*** *NOTE: Use these values when any of the following conditions exist:*
1. Possible damage to the joined members of the assembly may occur.
2. Thick and/or highly compressible gaskets are used between members.
3. Non-flat unmachined seating surfaces for bolt head (or nut) occurs.
4. Non-flat or non-parallel joint faces are encountered.

**** *NOTE: Use these values when ALL of the following conditions exist:*
1. Damage will not occur to the joined members of the assembly.
2. It is desirable to use this higher clamping force to ensure tightness.
3. Fastener thread is not lubricated prior to assembly.

Miscellaneous Data

CHEMICALS AND SEALANTS

The following chemicals and sealants quoted in this Workshop Service Manual are available from AGCO Parts Division..

Description	Quantity	Part No.
Hylomar ..... Jointing and sealing compound.	100 g tube	1447 390 M1
	280 g aerosol	3638 340 M91
High Strength Gasket ..... Loctite 509 - Specially prepared for AGCO to seal and prevent flexing of the lift cover to the rear axle casing. **This sealant must be used at all times.**	300 ml	3931 545 M1
Lock 'n' Seal ..... Loctite 222 - prevents small components from vibrating loose and provides an effective pipe thread seal against liquids or gases.	10 ml	3930 904 M1
Studlock ..... Loctite 270 - a heavy duty version of Lock 'n' Seal for larger components which need less frequent stripping down. Highly resistant to industrial fluids and gases.	10 ml	3405 352 M5
Crownwheel Retainer ..... Loctite 638 - for high strength retaining of close fitting parts. Designed to retain slip fitted or to strengthen press fitted parts, shafts bushes, pulleys etc.	6 ml	3930 274 M92
574 Multi-Gasket ..... Loctite 573 - forms a strong, flexible gasket which provides a gas-tight, water-tight, oil-tight seal up to 200º C (392º F). Does not shrink, crack, tear or perish.	50 ml	3900 613 M2
Super Lube ..... Multi-purpose synthetic lubricant containing Teflon®. Reduces friction and wear. Excellent dielectric properties, prevents tracking. Contains anti-oxidants and rust inhibitors, protects against moisture and corrosion.	7 gm Oiler	3931 224 M1
	357 ml aerosol	3931 225 M1
Cleaner and Degreaser ..... Loctite 7063 - a all-purpose solvent for removing grease and dirt.	400 ml aerosol	3930 907 M1
Cleaner and Degreaser ..... Loctite 7070 - cleaner and activator to be used to clean the lift cover and rear axle faces prior to application of Loctite 509.	400 ml aerosol	3931 549 M1
Super Glue ..... Instant bonding for metals, plastics, rubber and ceramics.	5g	3930 905 M1
Clear Silicone ..... A clear, tough, flexible and waterproof seal for metal, rubber, glass and plastics.	80g	3405 357 M5
	310 ml	3405 423 M2
Penetrating oil ..... A highly effective multi-purpose lubricant, moisture dispersant and dismantling spray.	330 ml aerosol	3930 850 M2
Gasket Remover ..... Dissolves gaskets for easy removal.	300 ml	3930 908 M1
Citrus Handcleaner ..... Works with or without water.	3 litre	3930 906 M1
Anti-freeze ..... Ethylene-glycol based, designed for protection down to minus 33º C (minus 27º F). Suitable for all types of engines, including those with aluminium cylinder heads.	1 litre	1894 799 M2
	5 litre	1891 780 M2
	25 litre	1891 781 M2
	205 litre	1891 782 M2
Brake Fluid (Green) ..... Specially developed for braking systems requiring a mineral fluid.	0,5 litre	3405 389 M1
Anti-Squawk Additive ..... Specially developed to be added to the transmission oil to prevent noise from wet brake installations.	1 litre	1889 891 M2
Protective Grease ..... Specially prepared grease for electrical components and connectors with dielectric properties, protects against moisture and corrosion. Long lasting, won't dry out.	Tin	3600 553 M1

CONVERSION TABLES

Area	Multiply by
mm^2 to in^2	0.0015
in^2 to mm^2	645.16
m^2 to ft^2	10.764
ft^2 to m^2	0.0929
ha to acre	2.4711
acre to ha	0.4047

Capacity	Multiply by
ml to fluid oz	0.0351
fluid oz to ml	28.413
litre to gal	0.2200
gal to litre	4.5640
litre to US gal	0.2640
US gal to litre	3.7850
gal to US gal	1.2010
US gal to gal	0.8330

Length	Multiply by
mm to in	0.0394
in to mm	25.400
m to ft	3.2808
ft to m	0.3048
km to mile	0.6214
mile to km	1.6093

Power	Multiply by
ps to hp	0.9863
hp to ps	1.0139
kW to hp	1.3410
hp to kW	0.7457

Pressure	Multiply by
bar to lbf/in^2	14.504
lbf/in^2 to bar	0.0690

Speed	Multiply by
km/hr to mile/hr	0.6214
mile/hr to km/hr	1.6093

Torque	Multiply by
Nm to lbf ft	0.738
lbf ft to Nm	1.356

Volume	Multiply by
mm^3 to in^3	0.6102
in^3 to mm^3	163.87
m^3 to ft^3	35.315
ft^3 to m^3	0.0283

Weight	Multiply by
gram to oz	0.3530
oz to gram	28.350
kg to lb	2.2046
lb to kg	0.4536
kg to ton	0.0010
ton to kg	1016.1
tonne to ton	0.9842
ton to tonne	1.0160

Temperature	
°C to °F	1.8 x °C + 32
°F to °C	(°F - 32) ÷ 1.8

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Servicing the Tractor

Section 1 - Part D

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Servicing the Tractor

GENERAL

This section has been compiled to enable the reader to ascertain quickly what action is necessary to prepare a new tractor for sale, install it on the farm and carry out the 50 and 300 hour services, which should be rendered during the warranty period.

The timing of these two services has been calculated to provide maximum tractor efficiency throughout the warranty period thus safeguarding the subsequent life of the tractor.

Also detailed is the 'Running-in' procedure which will ensure that the engine will give a satisfactory performance throughout its life.

NOTE: *This is an optimum list of checks, instructions, etc., and may not apply to the tractor you are working on.*

PRE-DELIVERY INSPECTION

Check **1-1D**

Procedure

Before checking

1. Verify and record for future use the serial numbers of the tractor, engine, and four-wheel drive front axle.
2. Assemble all parts that have been removed for transport.

Checking levels

Check and adjust if necessary the following levels with their specific liquids:

3. Cooling system, water or anti-freeze.
4. Fuel tank.
5. Engine oil.
6. Transmission and rear axle.
7. Rear axle epicyclic hubs (heavy-duty only).
8. Four-wheel drive front axle.
9. Four-wheel drive front axle epicyclic hubs.
10. Battery.
11. Hydraulic brake reservoir.
12. Screen washer reservoir - cab only.

Lubrication

Lubricate the following points:

13. Lubricate all grease points as detailed in the Operator Instruction Book.
14. Lightly oil clutch linkage, hand and foot throttle linkage, all hinges, catches and door locks.

Adjustments

Check and adjust if necessary:

15. Battery condition, charge if necessary.
16. Tension of fan and air conditioner compressor belt(s).
17. Clutch pedal cable - height.
18. Brake pedal linkage - free pedal clearance.
19. Torque of all wheel and rim nuts and bolts.
20. Tyre pressures.

Checks before Road Test

Turn the starter switch to 'Auxiliary' position (ON) - check:

21. All warning lights - ON, warning buzzer sounds.
22. Lights - head, side, indicator, work, interior and panel.
23. Hazard warning lights and horn.
24. Cab heater and fresh air blower.
25. Remove all traces of oil, fuel and coolant from the tractor to permit a leak check after road test.

Start the Engine

Start the engine and carry out the following functional tests:

26. Safety start switches - transmission and PTO.
27. Air cleaner restriction indicator, momentarily blanking off the air intake.
28. Fuel cut-off.

Road Test

Restart the engine, warm up the tractor, drive forward - carry out the following checks:

29. Balance and operation of brakes.
30. Steering operation - lock to lock.
31. Operation in all gears.
32. Differential lock function.
33. Four-wheel drive function.
34. Operation of cab heater and fresh air blower.
35. Operation of all air conditioning.
36. Operation of all gauges and instruments.
37. Parking brake effectiveness.

After Road Test

Hydraulic lift performance with 400 kg (900 lb) weight fitted to lower links - check operation:

38. Draft control.
39. Position control.
40. Transport - correctly positioned.
41. Pick-up hitch release, setting correctly positioned.
42. Response control effectiveness.
43. Selector valve - function.
44. Auxiliary control valve - function.
45. Trailer brake valve - function.

Electronic Systems

Check the operation of the following:

46. Electronic linkage control, if fitted.

Final Checks

With engine stopped, carry out the following:

47. Ensure that there are no oil, fuel or coolant leaks.
48. Clean off all preservatives and shipping labels.
49. Clean the tractor.
50. Ensure tool box contents and literature pack are to specification:
    a. Operator Instruction Book.
    b. Maintenance Chart.
    c. Tractor Service Record Book.
    d. Safety Book (North America only)

TRACTOR INSTALLATION

Instruction **2-1D**

Procedure

These instructions are to be given to the Owner and/or Operator of the tractor, all items must be fully explained and where applicable, performed. Emphasis must be given to all safety precautions in the operation and servicing of the tractor and its implements.

Installation Check List:

Use the Operator Instruction Book, Maintenance Chart and Tractor Service Record Book supplied with the tractor to explaining the following:

1. Location and significance of tractor, engine, cab and four-wheel drive front axle serial numbers.
2. Safety points and safety decals fitted to the tractor and highlighted in the Operator Instruction Book.
3. Use of all instruments and warning lights.
4. Running-in procedures.
5. Operation of the hand and foot throttles, use of the gear/travel and PTO speed chart.
6. Use and adjustment of the clutch pedal height.
7. Differential lock - engagement and disengagement.
8. Four-wheel drive - engagement and disengagement and four-wheel braking, when fitted.
9. Brake operation - latched and unlatched, method of adjustment.
10. Attachment of auxiliary hydraulic equipment.
11. Wheel width adjustment, front and rear. Correct settings for steering stops, front wheel alignment and tyre pressures.
12. Drawbar and pick-up hitch - operation and positions.
13. Servicing the tractor - routine maintenance procedures and service intervals as detailed in the Operator Instruction Book. Position of drain plugs, filler plugs and dipsticks, including hydraulic brake fluid reservoir.
14. Use of recommended Massey Ferguson lubricants and alternatives. Advice on engine fuel and oil filter replacement.
15. Instruct in the cleaning methods to be adopted for the hydraulic centrifuge filter and suction screens on the hydraulic system.
16. Cooling system - coolant level, frost precautions, adjustment of fan belt and cleaning the radiator, and oil cooler.
17. Maintenance of the engine and cab air filters.
18. Servicing of the air conditioning system. Adjustment of compressor belt, cleaning the condenser and operation during winter periods.
19. Connection and operation of trailers fitted with hydraulic brakes.
20. Use and power ratings of electrical output sockets for auxiliary equipment.
21. Operation and care of the radio cassette player. Care of cassettes in the tractor environment.

Demonstrate the following:

You will demonstrate the following points:

22. Engine starting and stopping procedures, when hot and cold.
23. Removal of air from the fuel system, the importance of using clean fuel.
24. Driving the tractor, starting and stopping, the use and sequence of gears, operation of clutches, especially those fitted with front end loaders and shuttle gearboxes.
25. Operation of the PTO, how to select the appropriate speed and how to change the PTO shaft.

26. Use of the hydraulic lift system, how to make adjustments and attach implements. Use of stabilisers and pick-up hitch, if fitted.
27. Operation of cab heater, fresh air blower or air conditioning system.
28. Demonstrate the use and calibration of the Speedometer/Performance Monitor.
29. Operation of Front Three-point Linkage and PTO, if fitted.

Carry out the following:

To complete the Installation, you are required to:

30. Give separate instructions on the use of any implements or attachments supplied.
31. Enter all the tractor serial numbers in the Registration Data section of this Tractor Service Record Book.
32. Explain to the owner his Warrant entitlement and the services due during the warranty period.
33. Complete the Installation and Registration Certificate and request the owner's signature.

RUNNING-IN

Instruction **3-1D**

Procedure

1. Experience has shown that the first 50 hours of tractor operation have a significant effect on the performance and life of the engine. From new, the tractor should be engaged in work which will load the engine as near as possible to full working conditions, emphasis should be given on varying the load to assist in the running-in.

Full load should not be applied until the engine has reached a temperature of at least 60°C (140°F).

2. Use low gear when pulling heavy loads.
3. During the running in period, check frequently the tightness of all wheel nuts and bolts.
4. To ensure proper clutch life, care must be taken to bed-in the friction plates properly.

NOTE: *During the first 15 hours of the tractor's life, frequently, but carefully engage and disengage the clutch. After the first 50 hours operation it may be necessary to adjust the clutch pedal height to suit the driver.*

INITIAL 50 HOUR SERVICE

Servicing **4-1D**

Procedure

The following operations are to be carried out after 50 hours running to remove factory fill lubricants by the Dealer service engineer.

Engine

1. Change the engine oil.
2. Change the engine oil filter.
3. Check the tappets, and adjust if necessary

Fuel System and Air Cleaner

4. Change the primary fuel filter element.
5. Check the air cleaner, clean the filter if necessary.

Cooling System

6. Check the coolant level and replenish if necessary.
7. Check the alternator/fan belt tension and adjust if necessary.
8. Check the air conditioning compressor belt tension and adjust if necessary.

Electrical System and Instruments

9. Check battery electrolyte level.
10. Check tightness of battery connections.
11. Check safety start switches for correct operation.
12. Check function of all instruments and warning lights.
13. Check function and adjustment of all lights.
14. Check function of all electronic systems.

Front Axle and Steering

15. Check the front axle oil level (four-wheel drive only), top up if necessary.
16. Check the front axle epicyclic oil level (four-wheel drive only), top up if necessary.

Transmission and Hydraulics

17. Check the transmission oil level and top-up if necessary.
18. Check the oil in the rear epicyclic hubs and top-up if necessary (heavy-duty axles only).
19. Check the torque of all wheel and rim nuts and bolts.
20. Check the tyre pressures and adjust if necessary.

Clutch and Brakes

21. Check the clutch pedal height and adjust if driver requests.
22. Check the foot brakes and adjust if necessary.
23. Check the parking brake and adjust if necessary.
24. Check the brake fluid level and top up if necessary.

Cab

25. Check the screen washer bottle fluid level and replenish if necessary.
26. Check the cab air filter, and clean if necessary.