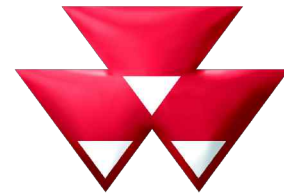


Workshop Service Manual



MASSEY FERGUSON

MF 300 series tractors



Beauvais
AGCO S.A.S. - 41 avenue Blaise Pascal - 60000
Beauvais - France - RC B562 104 539
© AGCO 2016

June 2016
ACT0027090
English

300 Series Tractor Workshop Manual

CONTENTS

Section No	Description
1	GENERAL SPECIFICATIONS
2	SPLITTING THE TRACTOR
3	ENGINE DATA
4	CLUTCH
5	GEARBOXES
6	REAR AXLE
7	POWER TAKE-OFF
8	FRONT AXLE
9	HYDRAULICS
10	ELECTRICAL SYSTEM
11	SERVICE TOOLS

SECTION 1

Introduction and Safety

INDEX

1A	INTRODUCTION and SAFETY
1B	TRACTOR SPECIFICATIONS
1C	MISCELLANEOUS DATA
1D	SERVICING the TRACTOR

Introduction and Safety in the Workshop

Introduction and Safety in the Workshop

Section 1 – Part A

Table of Contents

Operation No.	Description	Page No.
-----	Introduction	1A- 2
-----	Safety in the Workshop	1A- 4

Introduction and Safety in the Workshop

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.

Introduction and Safety in the Workshop

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 4, 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.*

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.

Introduction and Safety in the Workshop

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.

Introduction and Safety in the Workshop

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.

Introduction and Safety in the Workshop

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/Stand (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.

Introduction and Safety in the Workshop

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

Tractor Specification

Section 1 – Part B

Table of Contents

Operation No.	Description	Page No.
	Engine	1B-2
	Engine Cooling System	1B-2
	Engine Air System	1B-2
	Engine Fuel System	1B-2
	Clutch	1B-2
	Transmissions	1B-3
	Rear Axle	1B-3
	Brakes	1B-3
	Power Take-off	1B-3
	Steering	1B-4
	Front Axle - Two-wheel Drive	1B-4
	Front Axle - Four-wheel Drive	1B-4
	Electrical System	1B-5
	Hydraulic System	1B-5
	Drawbars	1B-5
	Capacities	1B-6
	Wheels	1B-6
	Dimensions and Weights	1B-7
	Tractor Mounting Points - 2 Wheel Drive	1B-8
	Tractor Mounting Points - 4 Wheel Drive	1B-9
	Serial Numbers - Tractor	1B-10
	Transmission Identification	1B-11
	Four-wheel drive front axle	1B-12
	Fuel Specifications	1B-13
	Fuel Handling, Storage and Specification	1B-14

Tractor Specification

Engine:

All engines listed below are Perkins diesel to Massey Ferguson specification.
Four stroke, water cooled, direct injection.

See Section 3 for the full engine specification

Engine – 3 cylinder:

Tractor Models applicable:

MF345, MF350 AD3.152 – naturally aspirated.
MF355, MF360 AT 3.152.4 – Turbocharged.

Engine – 4 cylinder:

Tractor Models applicable:

MF375, MF385 Diesel 4.41

Engine Cooling System:

Type – All tractors Thermostat controlled with centrifugal pump to assist circulation. Fan driven by a single belt from the crankshaft pulley.

Radiator pressure cap rating 0,75 bar.

Fan belt (s) deflection 10 mm.

Engine Air System:

Air cleaner Two-stage dry element with warning light. Removable main and safety element or oil type.

Air intake pre-cleaner Over-bonnet bowl type.

Engine Fuel System:

Fuel System

Fuel lift pump Hand primed, mechanically driven from camshaft.

Fuel filter Lucas filter with transparent sediment bowl.

Injection pump Lucas distributor type with mechanical governor.

Clutch:

Tractor Models applicable:

MF345, MF350, MF355, MF360, MF375:

Type Dual
Size – main clutch 305 mm.
PTO clutch (dual clutch) 254 mm.
Pedal clearance 11 mm.
PTO clutch clearance 2 mm.

MF385:

Type Dual.
Size – main clutch 330 mm.
PTO clutch 254 mm.
Pedal free travel 11 mm.
PTO clutch clearance 2 mm.

Tractor Specification

Transmissions:

Gearbox type:

8 x 2 gearbox	The 8 x 2 gearbox, standard or synchromesh, has eight forward and two reverse speeds. This is achieved by using a four forward and one reverse speed gearbox, compounded by an epicyclic unit.
Final drive	Bevel drive with epicyclic final reduction.

Crownwheel and pinion ratio:

MF345	6.1667:1 ratio with 6 x 37 teeth.
MF355	3.454:1 ratio with 11 x 38 teeth.
MF350, MF360, MF375	4.375:1 ratio with 8 x 35 teeth.
MF385	3.889:1 ratio with 9 x 35 teeth.

Rear Axle:

Tractor Models applicable:

Rear Axle

Final drives	Bevel drive with epicyclic final reduction
Differential lock	Mechanical, foot operated.

Brakes:

Tractor Models applicable:

Brakes

Foot brakes - MF 345	355 x 50 mm drum brakes, mechanically operated, together or independently to assist steering.
Foot brakes - MF350, MF355, MF360, MF375, MF385	Oil immersed mechanical operation, disc brakes, epicyclic drive operated together or independently to assist steering.
Parking brake - all tractors	Operates on both rear wheels at the same time independent of the foot brakes.

Power Take-off:

Tractor Models applicable:

Power Take-off (PTO):

Live PTO	Engine and ground-speeds are engaged by a lever on the left of the centre housing.
PTO Speeds	540 rev/min.
Shaft Diameter	35 mm.
No. of splines	6.
Engine to PTO shaft ratio	3.3125:1.

Tractor Specification

Steering:

Tractor Models applicable:

Steering – MF350, MF360, MF375, MF385

Type	Orbitrol hydrostatic power steering
Pump	Engine mounted gear pump with reservoir or engine mounted auxiliary tandem pump.
Front wheel toe-in	0-5 mm.
Turns – lock to lock	
MF350, MF360	2.7
MF375, MF385	3.6
MF385 4WD	4.3
<i>Turning circles – less brakes:</i>	
MF350, MF360	6,9 m.
MF375, MF385	7,5 m.

Front Axle – Two-wheel Drive:

Type	Three section with telescopic outer arms.	
Wheel camber/caster angles:	Camber angle	Caster angle
MF345, MF350, MF355.....	3° 30'	4° 56'
MF360.....	5°	4° 56'
MF375, MF385.....	4° 30'	0°
Maximum turning angle:		
MF345, MF350, MF355, MF360.....	55°	
MF375, MF385.....	52°	
Maximum static load capacity:		
MF345.....	2025 kg	
MF355.....	2385 kg	
MF350, MF360	2605 kg	
MF375	3459 kg	
MF385	4357 kg	
<i>Drag link bolt torques:</i>		
Clamp bolt	45 Nm.	
Peg bolt	45 Nm.	

Front Axle – Four-wheel Drive:

Type	Side drive mechanically or hydraulically engaged with or without Autolock or Hydralock differentials.
Maximum turning angle	50° (Adjustable stops to give 35°, 40° and 50° turning angle)
Turning circle - less brakes	
MF385	9,4 m
Maximum static load capacity:	
MF385	4904 kgf

Tractor Specification

Electrical System:

Voltage	12 volt negative earth
Battery	1 battery
Alternator	45 amp hour

Light Bulbs

Headlights.....	45/40 W
Plough and work light.....	55 W
Side lights.....	5 W
Stop and rear lights.....	5/21 W
Direction indications.....	21 W
N° plate lights.....	5 W
Range indicator lights.....	2 W
Instruments lights.....	2 W
Warning lights.....	
Alternator.....	3 W
All others.....	2 W

Hydraulic System:

Linkage pump	Four-cylinder scotch yoke pump, driven from the forward end of the PTO shaft supplying oil under pressure to the linkage ram cylinder, and four external take off points.
Maximum pump output	16,7 litre/min.
Maximum pump pressure	176 - 204 bar.
Filtration	140 micron washable strainer.

Maximum lift capacity at the lower links with links horizontal:

All models	1415 - 1588 kg
Hydraulic linkage	Category 1 and 2 interchangeable ball ends.

Drawbars and Linkage:

Swinging drawbar capacity:

	Normal-duty:	Heavy-duty:
Inner position	1000 kgf.	1633 kgf.
Centre position	775 kgf.	1180 kgf.
Outer position	775 kgf.	1180 kgf.
Distance drawbar clevis to PTO shaft:		
Inner position	240 mm.	
Centre position	345 mm.	
Outer position	395 mm.	
Drawbar off-set:		
Normal-duty	120 and 240 mm.	
Heavy-duty	194 mm.	
Nut torques:		
Drawbar frame to transmission case	420 Nm.	
Drawbar frame to PTO bracket	245 Nm.	
Lift linkage capacity:		
Interchangeable Cat. 1 & 2 ends	2145 kgf.	
Cat. 2 Fixed ends	2290 kgf.	

Tractor Specification

Capacities:

	MF 345	MF 350	MF 355	MF 360	MF 375	MF 385
Fuel tank	47,5 l	45 l	47,5 l	47,5 l	108 l	108 l
Cooling system	10,2 l	11,7 l	10,2 l	11,7 l	15,2 l	15,2 l
Engine oil	6,8 l	6,8 l	6,8 l	6,8 l	7,5 l	7,5 l
Transmission/hydraulics	33 l	36 l	36 l	36 l	36 l	47,4 l
Power steering reservoir	0,9 l	2,0 l	0,9 l	2,0 l	2,0 l	2,0 l
Oil bath air cleaner	0,65 l	0,7 l	0,5 l	0,5 l	0,7 l	0,7 l

Wheels:

Wheel, Rim Nut and Bolt Torques – 275, 290

Front axle – two-wheel drive

Wheel nuts	95 Nm.
Wheel bolts	108 Nm.

Front axle – four-wheel drive

Wheel nuts	270 Nm.
Rim to disc	190 Nm.

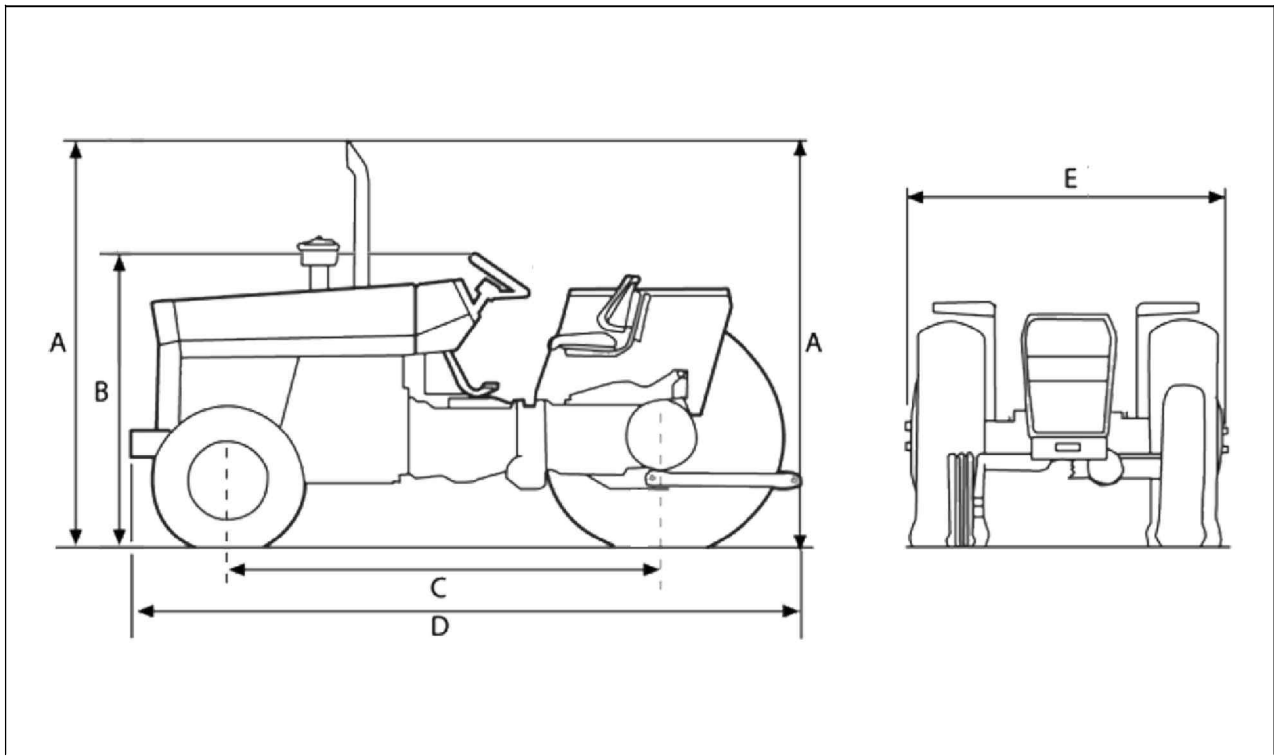
Rear wheels – pressed steel:

Wheel nuts	325 Nm.
Rim to disc	240 Nm.

Track Adjustments

Front track – two-wheel drive	1227–1880 mm.
Front track – four-wheel drive	1407–1908 mm.
Rear track (Pressed steel wheels)	1320–2134 mm.

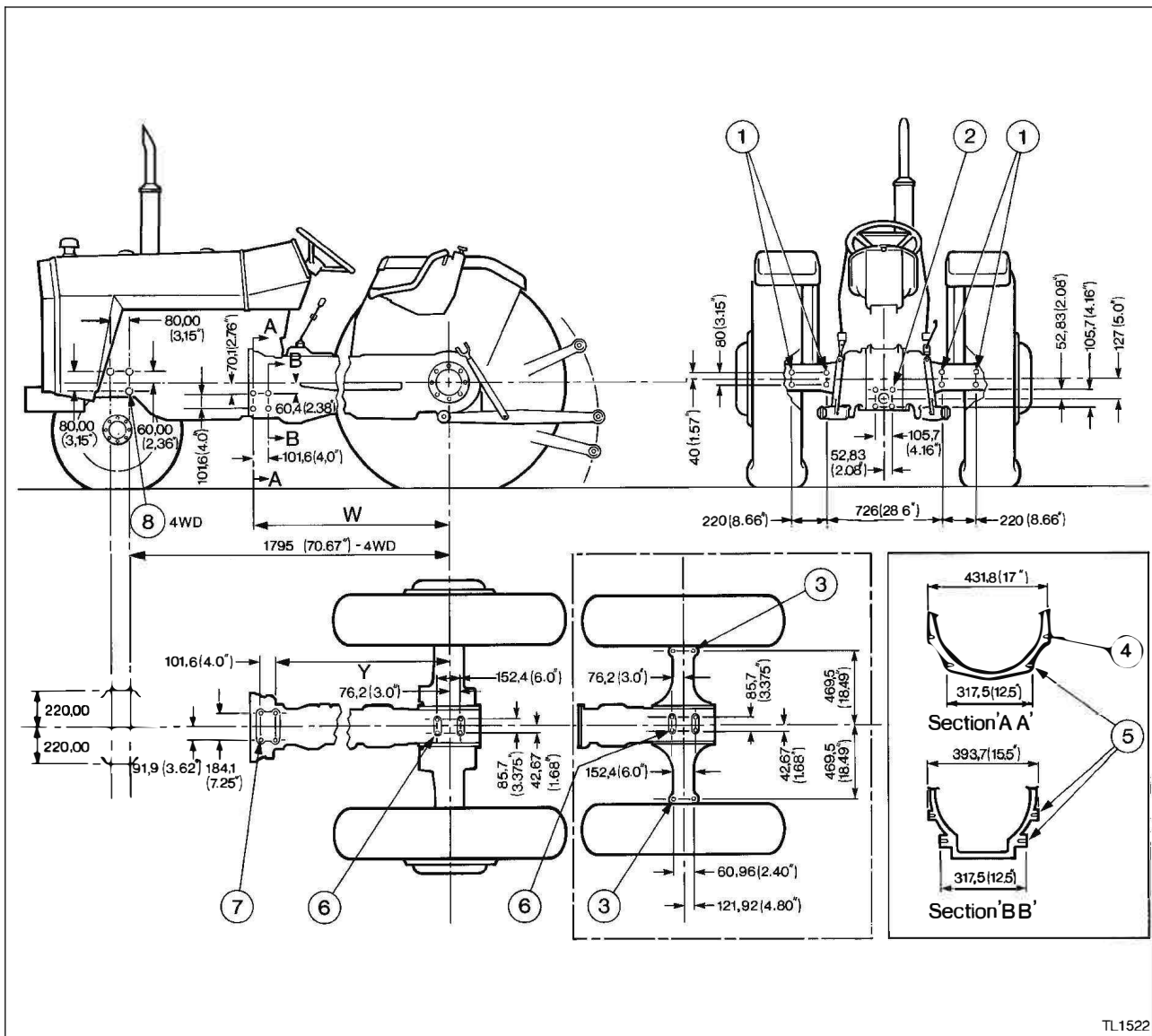
Tractor Specification



	MF 345	MF 350	MF 355	MF 360	MF 375	MF 385
A - Overall height - Over exhaust	2145 mm	2200 mm	2200 mm	2236 mm	2485 mm	2485 mm
B - Overall height - Over steering wheel	1410 mm	1520 mm	1490 mm	1499 mm	1730 mm	1781 mm
C - Wheelbase	1892 mm	2022 mm	1892 mm	2032 mm	2170 mm	2350 mm
D - Overall length	3260 mm	3390 mm	3260 mm	3353 mm	3670 mm	3810 mm
E - Overall width	1651 mm	1820 mm	1890 mm	1890 mm	1970 mm	1871 mm
Weight	1650 kg	1940 kg	1900 kg	2010 kg	2295 kg	2760 kg
Front tires	6.00-16		6.00-16	7.50-16	7.50-16	12.4-11-24
Rear tires	12.4/11-28		14.9/13-28	14.9/13-28	16.9/14-30	18.4/15-30

Tractor Specification

TRACTOR MOUNTING POINTS – 2 WHEEL DRIVE TRACTORS



W ... 1379,00 mm with spacer

W ... 1229,00 mm without spacer

Y ... 1242,56 mm with spacer

Y ... 1092,56 mm without spacer

1. ... 8 holes 5/8 inch - 11UNC - 2B x 28 mm deep.

2. ... 4 holes 1/2 inch - 13UNC - 2B x 22 mm deep.

3. ... 4 holes 16,20/16,46 mm diameter through.

4. ... 2 holes 5/8 inch - 11UNC - 2B x 24 mm deep.

5. ... 6 holes 5/8 inch - 11UNC - 2B x 32 mm deep.

6. ... 4 holes 3/4 inch - 10UNC - 3B x 29 mm deep.

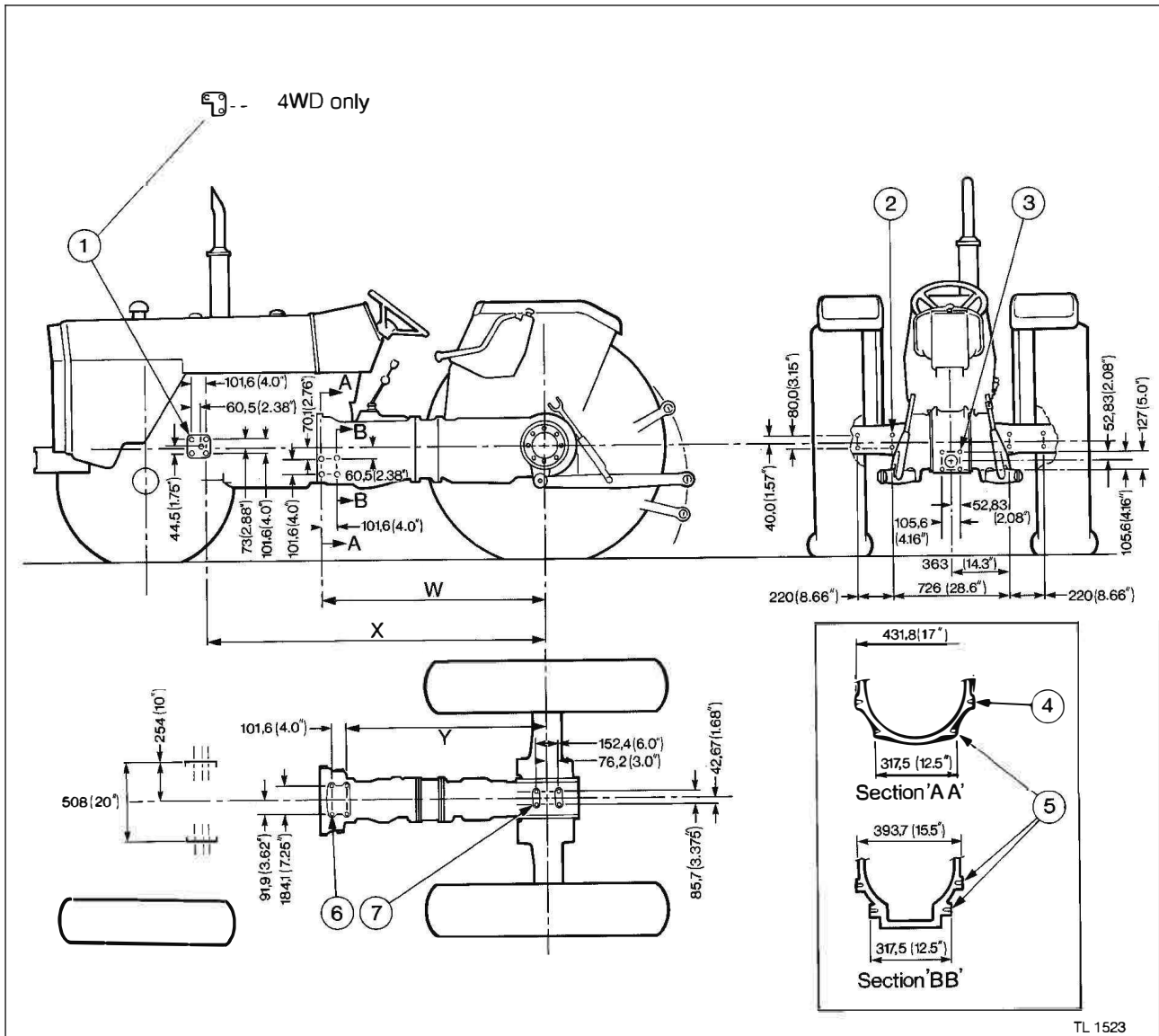
7. ... 4 holes 5/8 inch - 11UNC - 3B x 32 mm deep.

8. ... 6 holes 5/8 inch - 11UNC - 2B x 35 mm deep.

(these 6 holes (8) are on 240 - 4WD tractors only).

Tractor Specification

TRACTOR MOUNTING POINTS – 4 WHEEL DRIVE TRACTORS



W ... 1379,00 mm with spacer
W ... 1229,00 mm without spacer

X ... 2052,00 mm with spacer
X ... 1902,00 mm without spacer

Y ... 1242,56 mm with spacer
Y ... 1092,56 mm without spacer

- 1 ... 10 holes 3/4 inch - 10UNC - 2B x 38 mm deep (2WD)
- 1 ... 6 holes 3/4 inch - 10UNC - 2B x 38 mm deep (4WD)
- 2 ... 8 holes 5/8 inch - 11UNC - 2B x 28 mm deep.
- 3 ... 4 holes 1/2 inch - 13UNC - 2B x 22 mm deep.
- 4 ... 2 holes 5/8 inch - 11UNC - 2B x 24 mm deep.
- 5 ... 6 holes 5/8 inch - 11UNC - 2B x 32 mm deep.
- 6 ... 4 holes 5/8 inch - 11UNC - 3B x 32 mm deep.
- 7 ... 4 holes 3/4 inch - 10UNC - 3B x 29 mm deep.

Tractor Specification

SERIAL NUMBERS – TRACTOR

The serial number of the tractor is located in two positions, on the serial number plate.

Please quote the serial number of your tractor in all correspondence with your dealer or agent.

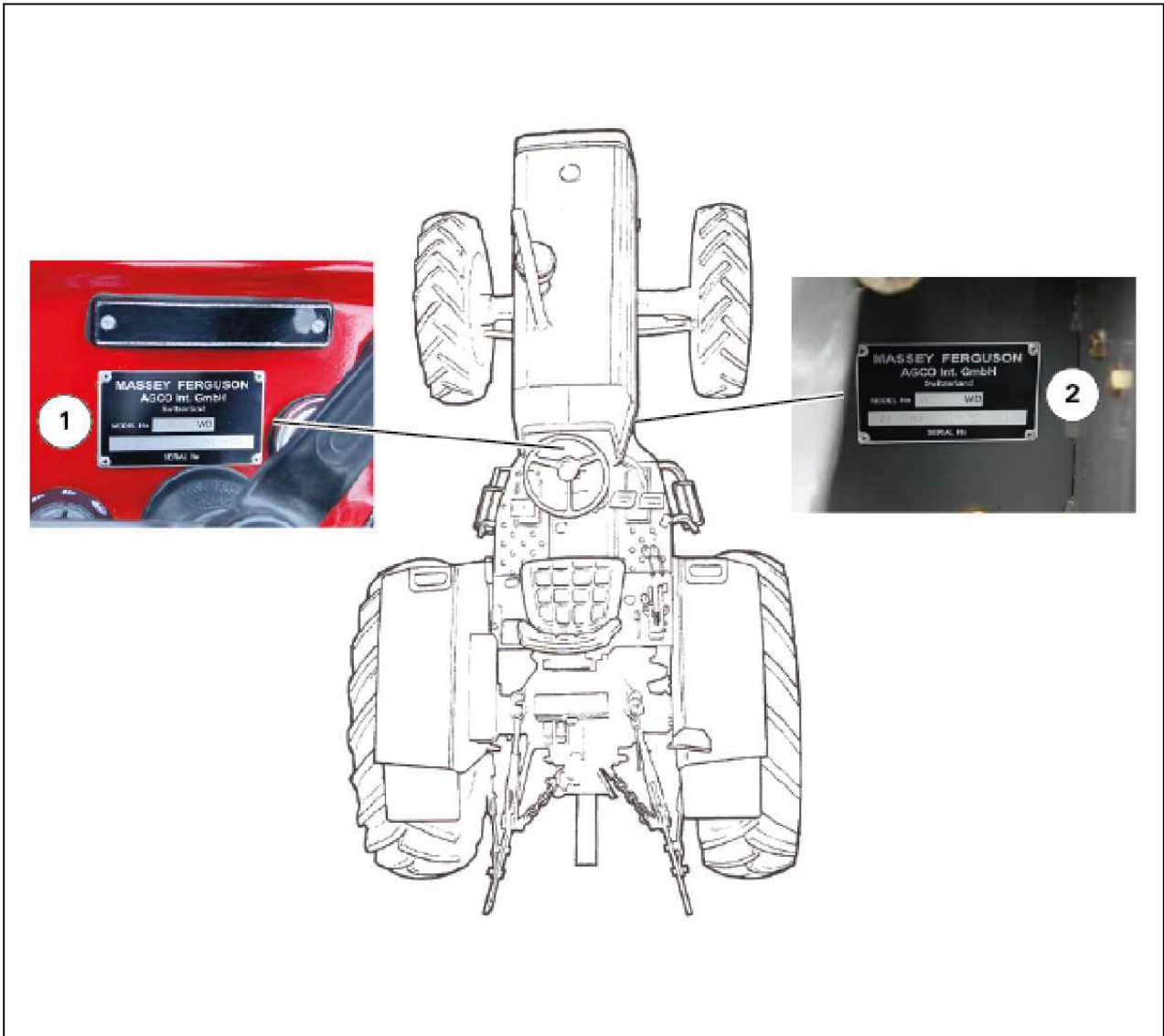


Fig. 1

1 Name plate with serial number - tractors MF 345 - MF 355

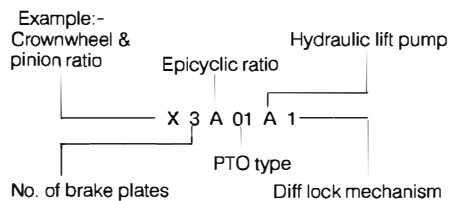
2 Name plate with serial number - tractors MF 350 - MF 360 - MF 375 - MF 385

Tractor Specification

TRANSMISSION IDENTIFICATION Tractor serial number D11073 onwards

Rear axle

A new transmission identification code has been introduced from tractor serial number D11073, manufactured in March 1995. The new code is a series of numbers and letters stamped on the left-hand rear centre housing lug and identifies the following (Fig.9).



Crownwheel and pinion ratio

W =	3.454 : 1	11 x 38
X =	4.375 : 1	8 x 35
Y =	3.889 : 1	9 x 35
Z =	6.167 : 1	6 x 37

No. of brake plates

3 =	Three friction plates
4 =	Four friction plates
5 =	Five friction plates
6 =	Six friction plates
0 =	None, direct drive drum brakes

Epicyclic ratio

A =	Normal-duty	3.75 : 1
B =	Normal-duty	3.14 : 1
C =	Heavy-duty	3.75 : 1
E =	Heavy-duty	4.8 : 1
F =	Direct drive disc brake	
G =	Direct drive drum brake	

PTO type

01 =	Live single speed low flow lift pump 540 rev/min
02 =	Live single speed high flow lift pump 540 rev/min
03 =	Single speed independent PTO 540 rev/min
04 =	Two speed shiftable 540/1000 rev/min IPTO
05 =	Two speed shiftable 540/1000 rev/min IPTO with lockout
06 =	Two speed shiftable economy 540/540E
07 =	Less PTO

Hydraulic lift pump

A =	Stand flow pump with black marked relief valve
B =	Stand flow pump with plain (no mark) relief valve
C =	Stand flow pump. Auxiliary pump. Plated drive. Plain relief valve
D =	Stand flow pump. Auxiliary pump. Plated drive. Black relief valve
E =	High flow pump. Centre shift gearbox. Shiftable PTO
F =	High flow pump. Side shift gearbox. Shiftable PTO

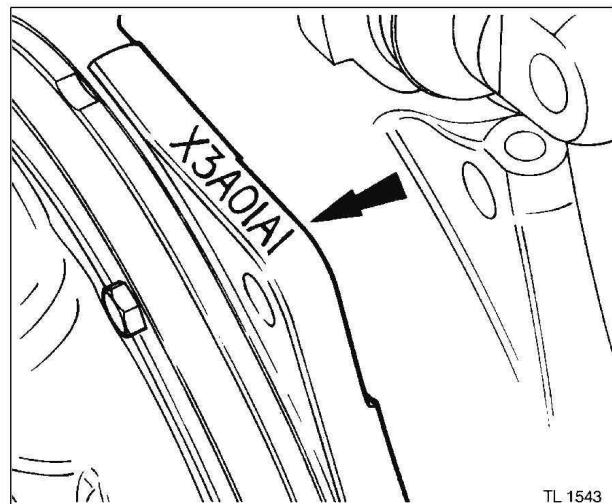


Fig.9

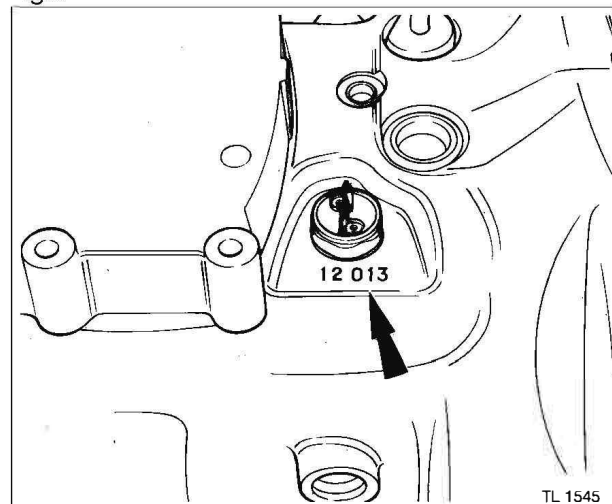


Fig.10

G = Industrial tractors - no pump

L = Less hydraulic pump

Differential lock mechanism

1 = Mechanical - foot operated

2 = Hydraulic operated

Transmission gearbox

Identification remains unchanged at D11072.

All gearboxes are stamped with a unit number adjacent to the safety start switch (Fig.10). This number identifies the build of the gearbox in respect of constant mesh ratio, PTO ratio, normal or heavy-duty epicyclic unit and whether the box is fitted with a long or short PTO shaft. Long shafts are fitted to tractors with a spacer, short shafts to non-spacer tractors.

Tractor Specification

SERIAL NUMBERS – FRONT AXLE

The serial number plate for the four-wheel drive front axle (Fig. 11) 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 65 SDN	Type 65 Side Drive - Narrow Normally fitted to 3 cylinder tractors.
AG 85	Type 85 Parallel Drive - Autolock differential - Normally fitted to 4 cylinder tractors.
AG 85 SD	Type 85 Side Drive - No differential - Normally fitted to 4 cylinder 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:

A	1991.
B	1992.
C	1993.
D	1994.
E	1995.
F	1996.
G	1997.
H	1998.
J	1999.
K	2000.

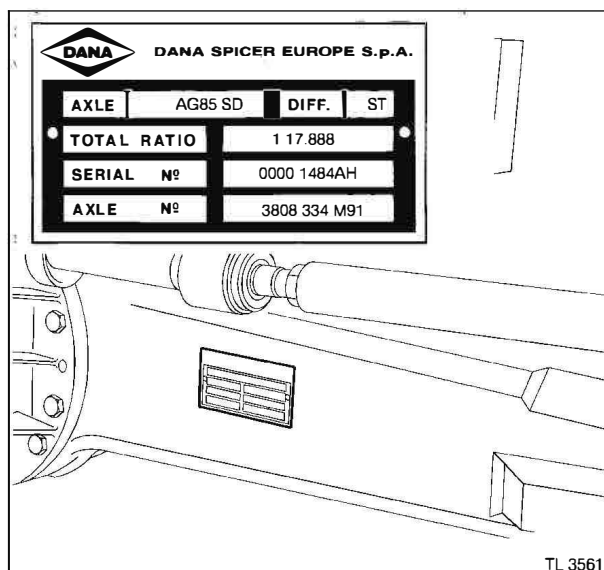


Fig.11

5. Axle Number

Part numbers of axle.

NOTE: The above part numbers may be subject to change.

Tractor Specification

FUEL SPECIFICATIONS

Limiting requirements for diesel fuel oils

Grades of diesel fuel oil	Flash point °F (°C)	Pour point °F (°C)	Water and sediment volume	Carbon residue on 10% residuum	Ash weight	Distillation temperatures °F (°C)		Viscosity at 100 °F (37.8 °C)		Sulphur weight	Copper strip corrosion	Cetane numbers
						90%		Kinematic, cSt (or SUS)				
	Min	Max	Max %	Max %	Max %	Min	Max	Min	Max	Max %	Max	Min
No 1-D. A volatile distillate fuel oil for engines in service requiring frequent speed and load changes.	100 or legal (37.8)	b	0.05	0.15	0.01	--	550 (287.8)	1.4	2.5 (34.4)	0.5 or legal	No 3	40f
No 2-D. A distillate fuel oil of lower volatility for engines in industrial and heavy mobile service.	125 or legal (51.7)	b	0.05	0.35	0.01	540c (282.2)	640 (338)	2.0c (32.6)	4.3 (40.1)	0.50d or legal	No 3	40f

1. To meet special operating conditions, modifications of individual limiting requirements may be agreed upon between purchaser, seller and manufacturer.
2. For cold weather operation, the pour point should be specified 10°F below the ambient temperature at which the engine is to be operated except where fuel oil heating facilities are provided.
3. When pour point less than 0°F is specified, the minimum viscosity shall be 1.8 cSt (32.0 SUS) and the minimum 90 percent shall be waived.
4. In Countries outside the U.S.A., other sulphur limits may apply.
5. Where Cetane number by Method D 613 is not available, ASTM Method D 976 Calculated Cetane Index of Distillate Fuels 2 may be used as an approximation. Where there is disagreement, Method D 613 shall be the referee method.
6. Low atmospheric temperatures as well as engine operation at high altitudes may require use of fuels with higher cetane ratings.

NOTE: Diesel fuels are classified as either No 1 (No 1-D) or No 2 (No 2-D) fuel. The grade No 1 fuel is recommended for service when the air temperature is below 32°F. The grade No 2 fuel, which will produce more work per gallon, is recommended for service when the air temperature is 32°F, or above. See chart for fuel requirements.

Tractor Specification

Fuel Handling, Storage and Specification

Diesel Fuel

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

Under no circumstance should gasoline, alcohol, gasohol or dieselhol (a mixture of diesel fuel and alcohol) be added to diesel fuel because of increased fire or explosion risks. In a closed container such as a fuel tank they are more explosive than pure gasoline. DO NOT use these blends. Additionally, dieselhol is not approved due to possible inadequate lubrication of the fuel injection system.

- Clean the filler cap area. Fill the tank at the end of each day to reduce overnight condensation.
- Never take the cap off or refuel with the engine running or hot.
- When filling the tank, keep control of the nozzle. DO NOT smoke.
- Don't fill the tank to capacity. Allow room for expansion and wipe up spilt fuel immediately.
- If the original cap is lost, replace it with a Massey Ferguson cap and tighten securely. A non Massey Ferguson cap may not be suitable.
- Keep equipment properly maintained.

Recommended Fuel Specification

To get the correct power and performance from your engine, use good quality fuel. The recommended fuel specification for Perkins engines is indicated below:

Cetane No. . 45 minimum.
Viscosity . 2/4.5 centistokes at 40°C.
Density 0,820/860 kg/litre at 15°C.
Sulphur 0.20% of mass, maximum.
Distillation . . 85% at 350°C.

Cetane Number

Cetane number indicates ignition performance. A fuel with a low cetane number can cause cold start problems and affect combustion.

Viscosity

Viscosity is the resistance to flow and engine performance can be affected if it is outside the limits.

Density

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

Sulphur

A high amount of sulphur can cause engine wear.

Distillation

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

Low Temperature Fuels

Special winter fuels may be available for engine operation at temperatures below 0°C. These fuels have a lower viscosity and also limit the wax formation in the fuel at low temperatures. If wax formation occurs, this could stop the fuel flow through the filter.

If you need advice on adjustments to an engine setting or to the lubricating oil change periods which may be necessary because of the standard of the available fuel, consult your nearest Massey Ferguson Dealer.

Miscellaneous Data

Miscellaneous Data

Section 1 – Part C

Table of Contents

Operation No.	Description	Page No.
-----	Bolt Torque Specifications	1C- 2
-----	Chemicals and Sealants	1C- 4
-----	Conversion Tables	1C- 5

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.

Miscellaneous Data

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.

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 Massey Ferguson Parts Departments.

Description	Quantity	Part No.
Hylomar Jointing and sealing compound.	100 g tube 280 g aerosol	1447 390 M1 3638 340 M91
High Flex Gasket Loctite 5205 – Specially prepared for Massey Ferguson to seal and prevent flexing of the lift cover to the rear axle casing. This sealant must be used at all times.	10 ml	3931 226 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 200° C (392° 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 357 ml Aerosol	3931 224 M1 3931 225 M1
Cleaner and Degreaser Loctite 7061 – a all-purpose solvent for removing grease and dirt.	400 ml aerosol	3930 907 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 310 ml	3405 357 M5 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 33° C (minus 27° F). Suitable for all types of engines, including those with aluminium cylinder heads.	1 litre 5 litre 25 litre 205 litre	1894 799 M2 1891 780 M2 1891 781 M2 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

Miscellaneous Data

CONVERSION TABLES

Area	Multiply by	Pressure	Multiply by
mm ² to in ²	0.0015	bar to lbf/in ²	14.504
in ² to mm ²	645.16	lbf/in ² to bar	0.0690
m ² to ft ²	10.764		
ft ² to m ²	0.0929	Speed	Multiply by
ha to acre	2.4711	km/hr to mile/hr	0.6214
acre to ha	0.4047	mile/hr to km/hr	1.6093
Capacity	Multiply by	Torque	Multiply by
ml to fluid oz	0.0351	Nm to lbf ft	0.738
fluid oz to ml	28.413	lbf ft to Nm	1.356
litre to gal	0.2200		
gal to litre	4.5640	Volume	Multiply by
litre to US gal	0.2640	mm ³ to in ³	0.6102
US gal to litre	3.7850	in ³ to mm ³	163.87
gal to US gal	1.2010	m ³ to ft ³	35.315
US gal to gal	0.8330	ft ³ to m ³	0.0283
Length	Multiply by	Weight	Multiply by
mm to in	0.0394	gram to oz	0.3530
in to mm	25.400	oz to gram	28.350
m to ft	3.2808	kg to lb	2.2046
ft to m	0.3048	lb to kg	0.4536
km to mile	0.6214	kg to ton	0.0010
mile to km	1.6093	ton to kg	1016.1
		tonne to ton	0.9842
		ton to tonne	1.0160
Power	Multiply by	Temperature	
ps to hp	0.9863	°C to °F	1.8 x °C + 32
hp to ps	1.0139	°F to °C	(°F - 32) ÷ 1.8
kW to hp	1.3410		
hp kW	0.7457		

Miscellaneous Data

Page left blank intentionally

Servicing the Tractor

Servicing the Tractor

Section 1 – Part D

Table of Contents

Operation No.	Description	Page No.
-----	General	1D - 2
2.01D-01	Pre-delivery Check	1D - 2
2.01D-02	Tractor Installation on the Farm	1D - 3
2.01D-03	Running In the Tractor	1D - 4
2.01D-04	50 Hour Service	1D - 4
2.01D-05	250 Hour Service	1D - 5
2.01D-06	Tractor Storage	1D - 5
2.01D-07	Tractor Waterproofing	1D - 7
-----	Maintenance Chart	1D - 8
-----	Massey Ferguson Recommended Lubricants	1D -11
-----	Alternative Lubricants	1D -13

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 250 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 through-out 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

2.01D-01

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 top-up if necessary the following levels with their appropriate liquids:

3. Cooling system, water or anti-freeze.
4. Engine oil.
5. Engine air cleaner (when fitted).
6. Transmission and rear axle.
7. Rear epicyclic hubs (when fitted).
8. Steering box oil (when fitted).
9. Power steering reservoir (when fitted).
10. Hydraulic brake reservoir (when fitted).
11. Front axle (four-wheel drive).
12. Front axle epicyclic hubs (four-wheel drive).
13. Fuel tank.
14. Battery electrolyte.

Lubrication

Lubricate the following points:

15. All grease nipples.
16. Four wheel drive shaft.
17. Four wheel drive front axle drive shafts (some axles do not require greasing).
18. Lightly oil the clutch linkage, throttle linkage both hand and foot.

Adjustments

Make the following checks and adjust if necessary:

19. Drain plugs for tightness.
20. Tightness of engine air intake and cooling system hose and pipe connections.

Ensure that all pipes, hoses and wiring are not fouling the exhaust system or sharp edges, check that they are securely clipped in place.

21. Alternator/fan belt tension.
22. Clutch linkage, free pedal clearance.
23. PTO clutch lever clearance (dual clutch only).
24. Brake pedal, free pedal clearance.
25. Differential lock clearance.
26. Torque all wheel and rim nuts and bolts.
27. Tyre pressures.
28. Front wheel alignment.
29. Battery condition, charge if necessary. Clean the battery top and smear the terminals with petroleum jelly.

Checks Before Road Test

Turn the starter switch to the 'Auxiliary' position, check the following, and if necessary rectify the fault:

30. All warning lights are 'On'.
31. Lights - head, side, direction indicator, work and interior.
32. Horn.
33. Headlight alignment.

Start the Engine

Start the engine, check the following, rectify if necessary:

34. Safety start function on the high/low gear lever and PTO lever.
35. All warning lights extinguish.
36. Engine idling, and maximum off-load speeds to specification using both hand and foot throttle.
37. PTO function and speed at 540 or 1000 rev. with a hand tachometer and that the speeds agree with the speed chart.
38. Air cleaner restriction indicator by momentarily blanking off the air intake.
39. Fuel shut-off function.

Stop the Engine.

40. Remove all traces of oil, fuel, and coolant from the tractor to permit a leak check after road test.

Road Test

Restart the engine and warm-up the tractor. Drive forward and check the following, investigate and rectify any fault:

41. Gear selection is 'normal' for the model.
42. Balance and operation of the brakes.

Servicing the Tractor

43. Differential lock function.
44. Four wheel drive function.
45. Parking brake.
46. Operation of all instruments, warning and indicator lights.

After the Road Test

Check the hydraulic lift performance with a weight or implement fitted to the lower links.

47. Draft Control.
48. Position Control.
49. Transport – correctly positioned.
50. Constant Pumping – correctly positioned.
51. Response Control – effective.
52. Selector valve – operation.

Auxiliary Hydraulics and Brake Valve:

53. Auxiliary control valve – function.
54. Trailer tipping pipe connection – function.

Final Checks

Carry out these final checks:

55. Ensure that no leaks are apparent from areas previously cleaned.
56. Check that all safety guards and decals are in place and correctly fitted.
57. Clean off preservatives and remove labels.
58. Clean the tractor.
59. Ensure that the tool box content is correct and the Operator instruction Book, Maintenance Chart, and Service Voucher Book are with the tractor.

TRACTOR INSTALLATION

2.01D–02

Instruction

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.

Use the Operator Instruction Book and Maintenance Chart supplied with the tractor to assist in explaining the following:

1. Location and significance of tractor and engine serial numbers.
2. All safety points and decals on the tractor and in the Operator Instruction Book.
3. The use of all instruments and controls.
4. Running-in procedure.
5. The operation of the throttle lever and foot pedal, use of the engine speed indicator, travel and PTO speed chart.

6. Use and adjustment of the clutch.
7. Differential lock, its engagement, disengagement and adjustment.
8. Four wheel drive, its engagement and disengagement.
9. Brakes, latched and unlatched, method of adjustment.
10. The attachment of auxiliary hydraulic equipment.
11. The method of making wheel width adjustments, front wheel alignment and tyre pressures.
12. Drawbar and hitch positions.
13. Servicing of the tractor, explain the oil changes and services as detailed in the maintenance section of the instruction book. Point out the position of the drain plugs, filler plugs and dipsticks. Include the power steering reservoirs.

Draw attention to the recommended grades of lubricants and advise on engine and hydraulic filter replacement and cleaning.

14. Cooling system frost precautions and the fan belt adjustment.
15. Maintenance of the engine air cleaner.

Demonstrate the Following:

16. Engine starting and stopping procedure, when hot and cold.
17. How to remove the air from the fuel system, stress the importance of clean fuel.
18. Driving the tractor, starting and stopping, the use and sequence of gears, operation of clutches.
19. Operation of the PTO and the method of changing the speed.
20. How to use the hydraulic lift system, make adjustments and attach implements. Use of check chains, stabilisers and pick-up hitch (when fitted).

Carry Out the Following:

21. Complete the information on the Installation and Registration Certificate and request the Owner to sign.
22. Enter the serial numbers etc. in the front of the Operators Instruction Book and hand to the Owner.
23. Explain to the Owner his Warranty entitlement and the services due during the warranty period.

Servicing the Tractor

RUNNING-IN

2.01D-03

Instruction

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

1. Experience has shown that the first 50 hours of tractor operation have a significant effect on the performance and life of the engine. 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.

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. During the first 50 hours a careful watch must be kept on the clutch pedal free travel, which should be adjusted as soon as the pedal travel decreases. This is particularly important when a loader is fitted.

50 HOUR SERVICE

2.01D-04

Servicing

The following operations are to be carried out after 50 hours running 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
4. Re-torque the cylinder head nuts and bolts on the MF 275, 283 and 290 tractors only.
5. Check the engine low and maximum off load speed, and adjust if necessary

Fuel System and Air Cleaner

6. Change the primary fuel filter element.
7. Check the air cleaner, change the oil or clean the filter if necessary.
8. Check the air cleaner hose connections and tighten if necessary.

Cooling System

9. Check the coolant level and replenish if necessary.
10. Check the alternator/fan belt tension and adjust if necessary.

Electrical System

11. Check the battery electrolyte level and replenish if necessary.

12. Check the tightness of the battery connections, ensure that the battery is clean and that the terminals are covered with petroleum jelly.

13. Check the tightness of all cable clips and terminals and check all wiring for chafing.

14. Check the operation of the safety start switches.

Front axle and Steering

15. Change the power steering pump oil and filter element (if fitted).

16. Check the front axle oil (four-wheel drive).

17. Check the front axle epicyclic oil (four-wheel drive).

Transmission and Hydraulics

18. Check the transmission oil level and top-up if necessary.

19. Clean the lift hydraulic filter screen.

20. Check the oil in the rear epicyclic hubs and top-up if necessary (heavy-duty axles only).

21. Check the torque of all wheel and rim nuts and bolts.

22. Check the tyre pressures and adjust if necessary.

Clutch and Brakes

23. Check the clutch pedal free travel and adjust if necessary.

24. Check the live PTO clutch setting and adjust if necessary.

25. Check the foot brakes and adjust if necessary.

26. Check the parking brake and adjust if necessary.

General

27. Lubricate all grease points.

28. Lightly oil the clutch linkage, throttle linkage both hand and foot.

29. Road test the tractor, checking all instruments, lights and services for correct functioning, in the event of any fault being found this must be corrected.

30. After the road test, check for leaks in the oil, coolant and fuel systems.

31. Enquire if any operational difficulties are being experienced by the Owner, correct or demonstrate as necessary.

32. Complete the 1st Service record card.

Servicing the Tractor

250 HOUR SERVICE

2.01D-05

Servicing

The following operations are to be carried out after 250 hours running or before the end of the warranty period whichever ever is first by the Dealer service engineer.

Engine

1. Change the engine oil.
2. Change the engine oil filter.

Fuel system and air cleaner

3. Check the air cleaner, change the oil or clean the filter if necessary.

Cooling System

4. Check the coolant level and replenish if necessary.
5. Check the alternator/fan belt tension and adjust if necessary.

Electrical System

6. Check the tightness of the battery connections, ensure that the battery is clean and that the terminals are covered with petroleum jelly.
7. Check the tightness of all cable clips and terminals and check all wiring for chafing.
8. Check the operation of the safety start switches.

Front Axle and Steering

9. Check the power steering pump oil level and top-up if necessary.
10. Check the front axle oil level (four-wheel drive), top up if necessary.
11. Check the front axle epicyclic oil level (four-wheel drive), top up if necessary.

Transmission and Hydraulics

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

Clutch and Brakes

16. Check the clutch pedal free travel and adjust if necessary.
17. Check the live PTO clutch setting and adjust if necessary.
18. Check the foot brakes and adjust if necessary.
19. Check the parking brake and adjust if necessary.

General

20. Lubricate all grease points.
21. Lightly oil the clutch linkage, throttle linkage both hand and foot.

22. Check all brake rods and cables for signs of rust, damage or excessive wear.
23. Road test the tractor, checking all instruments, lights and services for correct functioning, in the event of any fault being found this must be corrected.
24. After the road test, check for leaks in the oil, coolant and fuel systems.
25. Enquire if any operational difficulties are being experienced by the Owner, correct or demonstrate as necessary.
26. Complete the 2nd Service record card.

Servicing the Tractor

TRACTOR STORAGE

2.01D-06

General

When preparing a tractor for storage, comply with the following recommendations to ensure that the tractor is in good condition when required for use. Thoroughly clean the tractor, giving particular attention to the greasing points and oil filler plugs. Park the tractor in a dry, level and covered area away from the weather and livestock with easy exit in case of fire.

When the tractor has to be stored in the open air, park it on level ground in the shelter of a building or wall and completely cover it with a good tarpaulin.

Tyres

1. Jack up the tractor and position wooden blocks under the axles to relieve the tyres of all weight.
2. Inflate the tyres a little above the normal pressure and chalk that pressure on the tyre wall. Protect the tyres from direct sunlight.
3. When ballasted tyres are not filled with calcium chloride, deflate the tyres, empty out the water and re-inflate with air.
4. When wheel weights are fitted, remove, clean and paint any bare metal and refit.

Hydraulic Lift System

5. Check and replenish the transmission oil level in the centre housing to the high mark on the dipstick.
6. Using the tractor hydraulics, with the Response Control in FAST, raise and lower the linkage several times.
7. Engage the PTO for a short period to obtain the maximum circulation of transmission oil around the centre housing.
8. Raise the linkage to the Transport Position and support the two lift arms in this position with wooden chocks.
9. Leave the two quadrant levers in the Transport Position i.e., the Draft Control (outer) lever past the UP and the Position Control (inner) lever in Transport Position. DO NOT MOVE the quadrant control levers from these positions.

Steering

10. Clean and coat the exposed steering cylinder rod with grease.

Engine

11. Drain the engine sump oil, when hot if possible.
12. Change the filter element.
13. Refill the engine sump with an approved grade of oil.
14. Seal the crankcase breather, exhaust and air cleaner pipes with adhesive tape after running the engine.
15. Clean the dry air cleaner unit.

Cooling System

16. Drain the header tank, radiator and cylinder block, when hot if possible and leave the taps in the open position.
17. Rest the header tank cap on the filler neck.

Fuel System

18. Clean the fuel filter bowl(s), renew the elements and drain any sediment out of the fuel tank.
19. Top up the fuel tank completely to prevent condensation forming on the unfilled portion of the tank, thus resulting in water contaminating the fuel.
20. Remove the injectors and spray approximately 2 ml of engine oil into each cylinder bore. Using new joint washers, refit the injectors and slowly rotate the crankshaft one complete revolution. DO NOT bleed the fuel system of air.
21. Lubricate the foot and hand throttle control linkage.

Clutch

22. Fully depress the clutch pedal and hold down with a wooden chock. The clutch friction plates will then not bond themselves to the flywheel or pressure plates.

Battery

23. Remove the battery from the tractor.
24. Check the electrolyte level and top up as necessary.
25. Clean the battery top and coat the terminals with petroleum jelly.
26. Fully charge the battery from an external source.
27. Repeat the external charge every month during the storage period and top up the electrolyte as necessary.
28. Store the battery in a cool, dry, dust free location but not directly on a concrete or metal surface. There must be no possibility of freezing.

Alternator and Starter Motor

29. Remove any dust or dirt from the alternator.
30. Smear the starter motor and solenoid terminals with petroleum jelly.

Sheet Metal

31. All rusty, scratched or bare patches of castings and/or sheet metal must be cleaned with abrasive papers and repainted. Matching colours are available for all Massey Ferguson tractors.
32. The bright metal components and surfaces must be cleaned and/or degreased and the protectives sprayed or brushed on.

This as a preview PDF file from **best-manuals.com**



Download full PDF manual at **best-manuals.com**