

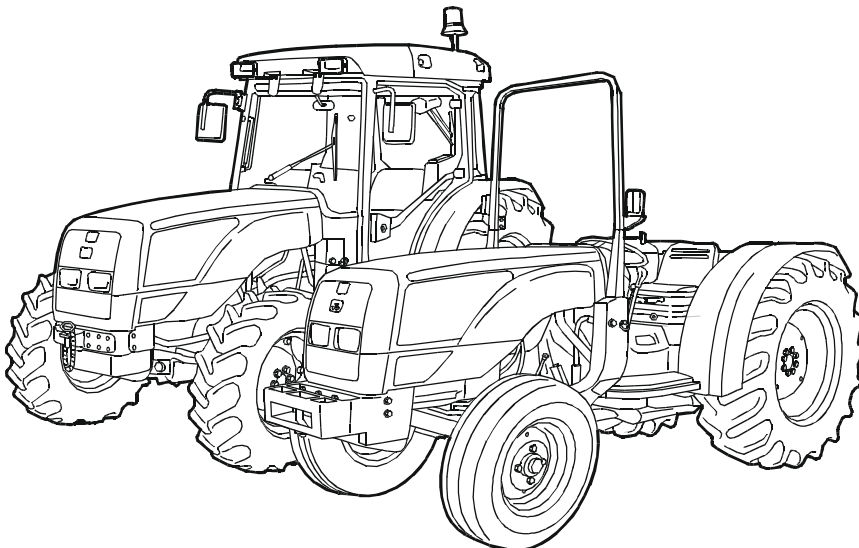
# 3300 Series Tractor Workshop Manual

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## Publication No 1857 251 M1 Volume 1

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# Introduction and Safety in the Workshop

## Section 1 - A

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# Introduction and Safety in the Workshop

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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 44 024 76 694400) (Fax 44 024 76 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.**

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## 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.*

# Introduction and Safety in the Workshop

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## 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

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## 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.

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## Compressed Air

- The pressure from a compressed air line is often as high as 7 bar (100 lbf/in<sup>2</sup>). 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

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## 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

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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 realize 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.

# Introduction and Safety in the Workshop

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## Tractor specifications:

### Engine

Make: Perkins diesel to Massey Ferguson specification.

Type: Four stroke, water cooled, direct injection.

### Models applicable:

3315	903.27, 55 ISO at 2250 rev/min.
3325	903.27T, 65 ISO at 2250 rev/min.
3330	1004.40, 68 ISO at 2200 rev/min.
3340	1004.42, 80 ISO at 2200 rev/min.
3350	1004.40T, 91 ISO at 2200 rev/min.
3355	1004.40T, 95 ISO at 2200 rev/min.

### Cylinders

3 or 4

### Engine power and torque

Consult the sales promotional leaflet for your model of tractor issued by your local Massey Ferguson Dealer at time of sale.

### Idle speed - all models

750 + 25 rev/min.

### Rated speed - all models

see above.

### Maximum no load speed:

3315, 3325	2410 + 25 rev/min.
3330, 3340	2350 + 25 rev/min.
3350, 3355	2310 + 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).

### Fuel System

#### Fuel lift pump

Mechanical, driven from camshaft, hand primed.

#### Fuel Filter

CAV canister type filter.

#### Water sedimentor

CAV with transparent sediment bowl.

#### Injection Pump

CAV distributor type with mechanical governor.

#### Injectors

CAV nozzles and holders.

#### Starting aid

CAV thermostatic.

### Air System

#### Type

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

### 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/in<sup>2</sup>).

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**Clutch\*** (Single plate, dry, organic) \*Mechanical on FE Models.

Hydrostatic control

3315, 3325, 280 mm (11 in).  
3330, 3340. 3350, 3355 305 mm (12 in).

## Front linkage and Power take off

Optional: Front linkage.  
Optional: 1000 rev/min P.T.O, independent, operated by switch actuated by hydraulic clutch.

Shaft diameter 35 mm.  
P.T.O./engine r.p.m. ratio: 1:2:4.  
No. of splines 6  
Lift capacity at ball ends (Kg): 1500  
Maximum power 58 kW.

## Power-take off, rear

Standard: Independent, operated by switch, actuated by hydraulic clutch. 540/540 Economy rev/min. Fixed, 6-spline PTO shaft.

Shaft diameter: 35 mm, 6 and 21 splines.

Optional: 540/1000 rev/min, Interchangeable PTO shafts, Shiftable PTO, by axle mounted lever. Ground speed PTO.

540/540 Economy: (standard) 1967/1560 (2167) rev/min  
540/1000: (standard) 1967/2043 rev/min

## Rear Brakes

Rear service brakes

Disk diameter: 224 mm.  
Disk number: 1 on each side.

Standard: Oil cooled, with hydraulic actuation, Parking brake, hand lever operated.

## Front Brakes

Front service brakes 2 and 4WD

2WD Disk diameter: 224 mm.  
Disk number: 2 on each side.  
4WD Disk diameter: 178 mm.  
Disk number 1 on each side.

.Optional: Trailer brakes; hydraulic, pedal operated.

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## Gearbox

16 forward speeds + 8 reverse speeds:	4 gears x 2 ranges + mini-reduction gear unit + Reverse gear unit.
24 forward speeds + 12 reverse speeds:	4 gears x 3 ranges + mini-reduction gear unit + Reverse gear unit.
Only for tractors equipped with platform/cab driving stations:	
20 forward speeds +10 reverse speeds:	5 gears x 2 ranges + Mini-reduction gear unit + Reverse gear unit.
30 forward speeds + 15 reverse speeds:	5 gears x 3 ranges + Mini-reduction gear unit + reverse gear unit.
45 forward speeds + 45 reverse speeds:	5 gears x 3 ranges + reverse gear unit+ TRIPLESHIFT

## Steering

Standard: Hydrostatic and Telescopic steering column.

Minimum turning radius on farm land (under braking action).

3315 - 3325	2905 mm.
3330 - 3340	3115 mm.
3350	3060 mm.
3355	3230 mm.

## Front Axle 2-W.D.

Telescopic with variable track.

Max. steering angle, V/S, F, FE, G, GE 50/70 degrees.

## Front Axle 4-WD

Type: Centre drive, hydraulically engaged with hydraulic differential.

3315, 3325,3330,3340 30 Km/h 1,5805 (Applies only to 'V' version).

40 Km/h 1,5818.

'V' models 50

'S' and 'GE' models 56

'F' and 'FE' models 50

# Introduction and Safety in the Workshop

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## Electrical equipment

Voltage:	12 V.
Alternator capacity	14 V - 65 A. 14 V - 85 A with air conditioning.
Battery capacity:	100 Ah and 470 A of rated power.
Starter motor capacity:	
3315, 3325	2.7 KW (ISKRA).
3330, 3340, 3350, 3355	3 KW (ISKRA).
Warning horn:	Diaphragm type.
Roadway type lighting	
Front headlamps:	W 45/50.
Rear lights	
Side, stop and directional:	W 5/21/21.
License plate light:	W 5.
Front lights	
Side, directional:	W 21/5.
Rear work headlamp	W 35
Warning horn: dBA a 2m	V 12 - 3A freq. 430 Hz + 25 105- 118dBA

## Hydraulic System

The hydraulic system is equipped with 2 pumps:

Standard:	11 cc pump, with capacity of 27 litre/min. Supplies oil to power steering, the electro-hydraulic control functions and the gearbox lubrication circuit. 14 cc pump, with capacity of 34 litre/min. Supplies the auxiliary hydraulic distributors and the hydraulic power-lift.
Optional:	11 cc, pump with capacity of 27 litre/min. Supplies oil to power steering, TRIPLESHIFT power unit, electro-hydraulic control functions and gearbox lubrication circuit. 19 cc pump, with capacity of 47 litre/min. Supplies the trailer hydraulic brake distributors and the hydraulic power-lift.
Optional (only for tractors equipped with platform/cab and 10-way hydraulic control valve):	11 cc pump, with capacity of 27 litre/min. Supplies oil to power steering, TRIPLESHIFT power unit, electro-hydraulic control functions and gearbox lubrication circuit. Tandem pump with 10.8 + 10.8 cc displacement and 27+27 litre/min capacity. In this case, the tractor is also equipped with an auxiliary control valve with 6 rear ports and 4 side ports obtained by splitting the 4 rear ports. The hydraulic system is equipped with a 160 micron filter, installed on the first section of the suction line. A second filter, with a filtration rating of 15 microns and an interchangeable cartridge, is installed on the pressure line from the pump.
Max. pressure:	180 bar

# Introduction and Safety in the Workshop

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## Auxiliary Hydraulic Distributors

Standard:	4 ways 2 ways double-acting. 2ways double-acting changeable into single-acting and equipped with “detent”
Optional:	6 ways 2 ways double-acting changeable into single-acting and equipped with KICK-OUT. 2 ways double-acting changeable into single-acting and equipped with “detent” 2 ways double acting equipped with FLOAT. FLOW DIVIDER which regulates constant oil flow (3-42 l/min) to the two ways of the hydraulic distributor equipped with KICK OUT Fitted on request with tandem hydraulic pumps (27+27 litre/min) the 6-way control valve may be equipped with a further 4 ways on the right-hand side of the tractor, obtained by splitting the 4 rear ways, thus bringing the total number of service outlets to 10.1 Fitted on request with tandem hydraulic pumps (27+27 litre/min) the 6-way control valve may be equipped with a further 4 ways on the right-hand side of the tractor, obtained by splitting the 4 rear ways, thus bringing the total number of service outlets to 10. Two rear - mounted single/double acting spool valves. 3rd spool valve with/without flow control and free return.
Standard:	
Optional:	2 additional mid-mounted spool valves.

## Rear Lift Hydraulics

The power-lift's hydraulic system is the open-centre type.

The circuit's pressure setting is 180 bar.

Lifting capacity: (kg.)

1600 (“ISO” - centre of mass of implement);

Class II 3-point hitch (can be converted to class I if necessary).

## Front Power-Lift

Integral design, operated by single-acting hydraulic lift cylinders.

Lift capacity: (kg.)

950 kg (“ISO” - centre of mass of implement)

Interchangeable category I and II hook ends.

Quick release removable lift arms.

## Heating System

Current supply through a 65 A alternator (85 A with air conditioning).

Radiating block with tubular elements.

Resistance 0,7 Ohm

Thermic rating.

2400 Watt

Control potentiometer.

# Introduction and Safety in the Workshop

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## Air Conditioning System Type

Compressor with isobaric valves.	
Condenser with radiating body,	Thermic rating 5000 Watt
Eco friendly refrigerant (R134a).	
Gas capacity.	1.60 kg
Air - conditioning System	
Ventilation Unit:	Dual - body fan
	3 - speed control: 200-400-600 m3/h
	Pressurization 14 mm H2O on 3rd ventilation speed.
	4 adjustable air flow vents directed toward driver.
	2 adjustable air flow vents directed downwards.
	2 air recirculation inlets (with inlets fully open, recirculated air has priority).
	Fixed demist/defrost vent.
	External air intake at rear of roof with recess for filter.
	Paper or activated carbon filter element protected by removable grille for easy servicing.

## Capacities:

### Fuel Tank:

Main fuel tank (Standard)	45 litres.
Auxiliary fuel tank (Optional)	28 litres.
For tractors in base version:	55 litres (+32 litre of the optional supplementary tank)
For tractors equipped with front P.T.O and front lift:	58 litres
For tractors equipped with front lift, but without front P.T.O	69 litres

### Transmission/hydraulics:

Two and four wheel drive	50,0 litres
Rear axle epicyclic hubs-heavy duty only-each side	2,9 litres

### Front four-wheel drive axle:

Oil capacity - complete axle:	6,0 litres
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### Engine oil:

Three cylinder engines	5,7 litres
Four cylinder engines	6,5 litres

### Cooling system:

Three cylinder engines	10,2 litres
Four cylinder engines	17,5 litres

### Dual screen and rear window washer bottle:

Capacity	2,5 litre
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### Front P.T.O gearbox

Capacity	0,6 litre
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# Introduction and Safety in the Workshop

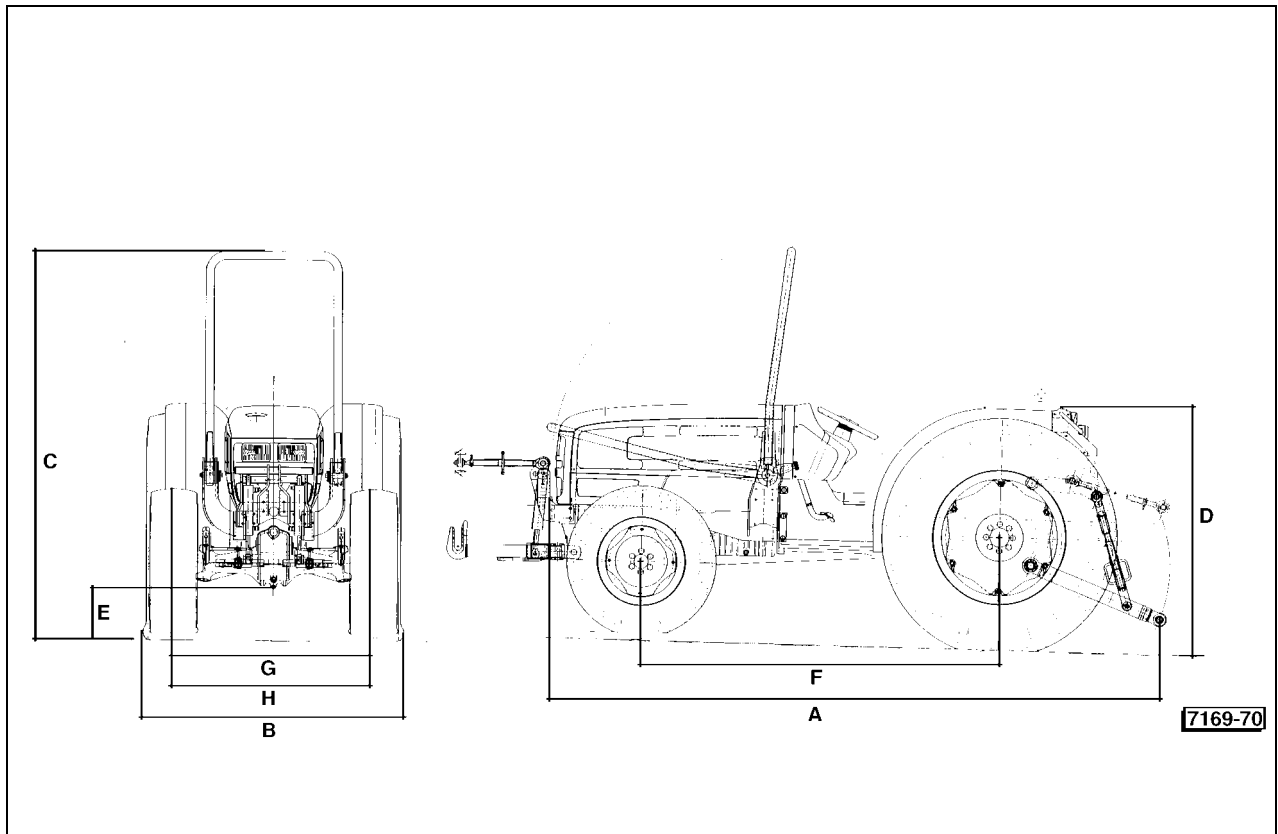


Fig.1

## Tractor Dimensions and Weights

Tractor model	Dimensions - mm	
	3315/3325	3330, 3340, 3350, 3355
Max. length:		
(Without front lower links)		
without ballast:	3431	3686
with ballast:	4136	3801
With front and rear lower links: - A		
without ballast:	4036	4201
with ballast:	4136	4301
Track setting:		
Front/Rear (Min)	993/974	993/1271
Front/Rear (Max)	1271/1476	1076/1476
Maximum Height: - C		
at safety frame	2210	2210
at cab (standard)	2220	2170
Ground clearance:	230	230
Wheelbase: - F	1926	2056
Minimum turning radius:		
(without brakes)		
Two wheel drive:	2905	2905
Four wheel drive:	3115	3115



# Introduction and Safety in the Workshop

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## Operating weight (Kg)

(without front lift) with driver platform

without ballast:	2240	2440
with ballast:	2345	2545

With cab

without ballast:	2370	2600
with ballast:	2475	2705

## Dimensions (mm)

Tractor model	3315/3325	3330, 3340, 3350, 3355
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## Operating weight (Kg)

(with front lift) with driver platform:

without ballast:	2310	2500
with ballast:	2560	2750

With cab

without ballast:	2440	2660
with ballast:	2690	2910

## Weight ballast

front ballast with cast iron plates: (Kg)	140 (70x2)	140 (70x2)
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cast centre (four wheel drive only):	200	200
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Tyre size:

Front:	Two wheel drive	7.50/16	7.50/16
	Four wheel drive	8.25/16	280/70R28

Rear		13.6/28	420/70R28
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Min width: - H

V/S/F models (‘V’ not available in 3350 or 3355)	1,0/1,2/1,4	1,0/1,2/1,4
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FE/GE models	1,4/1,28	1,5/1,28 (3350/3355 only)
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Table 1

**IMPORTANT:** *Severe working conditions: Where tractors are operating arduous work cycles, or when working in areas where there are dusty conditions, paddy fields, deep water etc, coupled with lack of maintenance care and low specification fuel and oil, the intervals of service should be halved, particularly for oil and filter changes.*



**WARNING:** Tractor lubricants and greases. No significant hazard when properly used and in the application for which they were designed. Frequent and / prolonged skin contact may give rise to skin irritations. Emergency treatment of acute effects: Indigestion: DO NOT induce vomiting. Administer 250ml (1/2 pint) milk or 50 ml olive oil. Seek medical advice. Skin contact: Remove by wiping, wash with soap and water. Inhalation: Saturated vapour non-toxic at room temperature. Remove from exposure. Eye contact: Wash with large amounts of warm water.

# Introduction and Safety in the Workshop

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## Conversion Table

<b>Area</b>	<b>Multiply by</b>	<b>Pressure</b>	<b>Multiply by</b>
mm <sup>2</sup> to in <sup>2</sup>	0.0015	bar to lbf/in <sup>2</sup>	14.504
in <sup>2</sup> to mm <sup>2</sup>	645.16	lbf/in <sup>2</sup> to bar	0.0690
m <sup>2</sup> to ft <sup>2</sup>	10.764	<b>Speed</b>	<b>Multiply by</b>
ft <sup>2</sup> to m <sup>2</sup>	0.0929	km/hr to mile/hr	0.6214
ha to acre	2.4711	mile/hr to km/hr	1.6093
acre to ha	0.4047		
<b>Capacity</b>	<b>Multiply by</b>	<b>Torque</b>	<b>Multiply by</b>
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	<b>Volume</b>	<b>Multiply by</b>
gal to litre	4.5640	mm <sup>3</sup> to in <sup>3</sup>	0.6102
litre to US gal	0.2640	in <sup>3</sup> to mm <sup>3</sup>	163.87
US gal to litre	3.7850	m <sup>3</sup> to ft <sup>3</sup>	35.315
gal to US gal	1.2010	ft <sup>3</sup> to m <sup>3</sup>	0.0283
US gal to gal	0.8330		
<b>Length</b>	<b>Multiply by</b>	<b>Weight</b>	<b>Multiply by</b>
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
<b>Power</b>	<b>Multiply by</b>	<b>Temperature</b>	
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 to kW	0.7457		

# Introduction and Safety in the Workshop

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## **How to order spare parts**

To ensure perfect tractor efficiency thus avoiding serious drawbacks, and to optimize your investment and the operational expenses, the use of “ORIGINAL SPARE PARTS” is recommended.

Spare parts orders must specify the following:

Tractor serial number and engine serial number (if the engine is concerned).

Spare part name and reference code.

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# Splitting the Tractor

## Section 2-A

Thank you so much for reading.  
Please click the “Buy Now!”  
button below to download the  
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