

Massey Ferguson®

2650 / 2660 / 2670 / 2680

Tractor

SERVICE MANUAL

4283420M1

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01A01 Introduction

01B01 Tractor general specifications

Content - Module 01: Introduction

01

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Tractor models applied

Massey Ferguson Tractor Series

HD Series 2600

Models and variations

- HD Series 2650
- HD Series 2660
- HD Series 2670
- HD Series 2680

Footstep (Fig. 1) and cab versions (Fig. 2)



Fig. 1



Fig. 2

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Introduction

01

A. Presentation

The purpose of this Workshop Manual is to help Dealers in the efficient maintenance of Massey Ferguson 200 Series Advanced Tractors.

Good after sale support is becoming increasingly important. Besides selling a good product, it is essential to provide good service, because that is the only way that to reach the greater goal: customer satisfaction.

With this in mind, the structure of the maintenance offered by the Dealer is of fundamental importance, and it should be performed only by trained personnel who are perfectly familiar with the different components of the tractor. For this reason, in addition to undertaking regular refresher courses at one of AGCO's Training Units, you should always consult this Manual before performing the service, whenever there is any doubt. Beside keeping it in usable condition, the Service Department should be aware of the updates that are introduced from time to time in the tractors and thus in the Manual. .

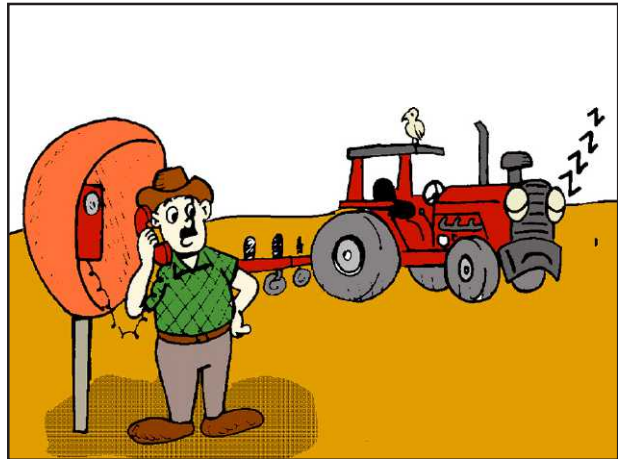


Fig. 1

B. How to use this manual

- This manual is divided into Modules (01, 02, 03, 04, 05), and each of them describes a specific sector of the tractor.
Examples: Engine, front axle, hydraulic systems, etc.
- Each module is divided into subsections (A, C, C, D...), which describe a specific type of system when there are different options.
Examples - Engines: International Engine 4-3.9 / 4-4.1, 1000 Series, etc.
- Each Section is divided into Subsections (01, 02, 03, 04...), and each one described a part or subdivision.
Examples - Engines: Head, block, crankshaft, etc.
- Each subsection is divided into chapters (A, B, C, D...).
- Each page of the subsections has a sequence number beginning with 01.



Fig. 1

01

Introduction

01

C. Safety

Your safety and the safety of others should be your first concern when doing maintenance work. For this to work, you need to do three things: be aware of what you are doing, use the tools correctly, and use the right protective equipment, both personal and collective.

Awareness depends on each person, which means that every person needs to be aware of what they are doing and what risks they are taking in their work. When you learn about a safety rule, don't think of it as "don't do this, don't do that". First you should think about what might happen if you break that rule. Don't believe that old idea the "you have to learn by making mistakes", because the results of a mistake might be impossible to fix. Remember: After an accident, the first thing you think is that you would do anything to go back and not make that mistake. Walking 20 meters to get the "right tool" might be tiresome, but it's never going to be as much trouble as an accident that causes injury or damage.

As far as the rules go, it's impossible to write them all down. There are too many possible risks. What we have here are some basic rules as an example.

- Always use the tools and gear that are right for the job, especially when you are working with heavy assemblies and parts. Make sure that the hydraulic jack, the block and tackle, the chain are in perfect condition, and strong enough for the load.
- Every time you use a power tool, check that it is grounded and that there are no exposed wires.

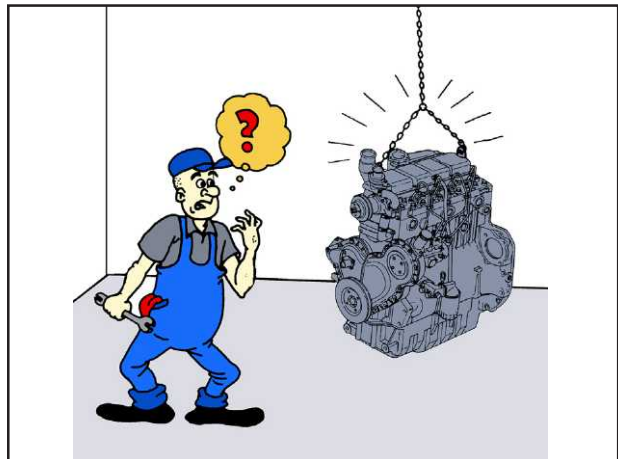


Fig. 1

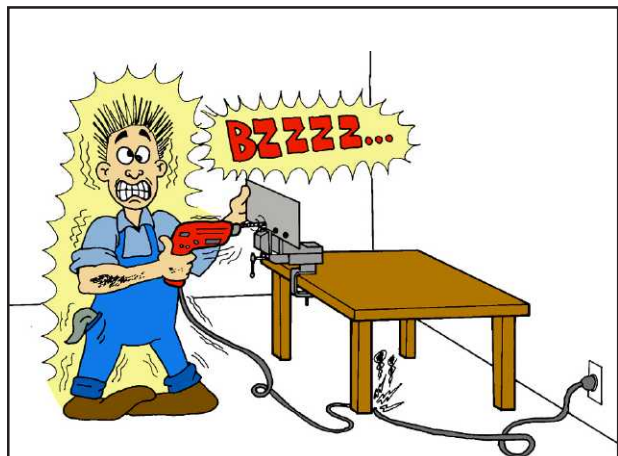


Fig. 2

- Always disconnect the negative cable from the battery, so that no one can accidentally turn on the starter motor.

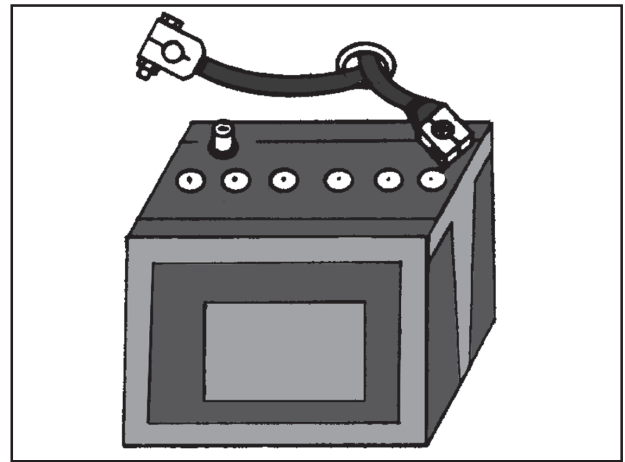


Fig. 3

- When welding, as well as disconnecting the battery, you should use the proper protection: safety mask or goggles, gloves and apron. If you don't use eye protection, for example, you can do permanent damage to your eyes very quickly!



Fig. 4

- When splitting a tractor, you must use the right cranes and tackle. This will make the work safer, but also better quality and more profitable. Always use wooden wedges to chock the wheels which will not be removed in the job.

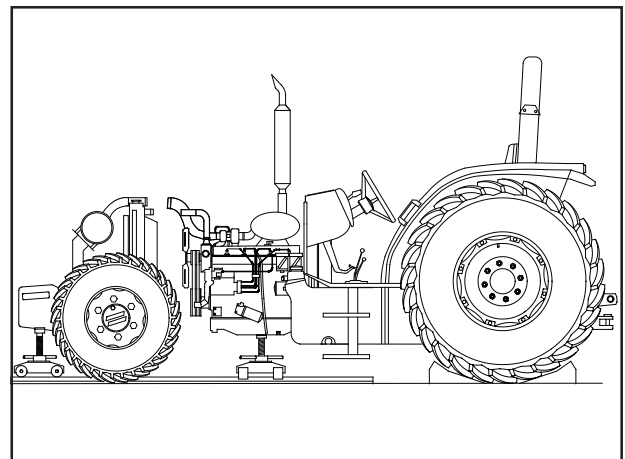


Fig. 5

- Don't let the floor of the workshop get soaked with oil: it will cause accidents, and it lowers the tone of the shop. Remember: well organized workshop reflects the quality of the people that work there.

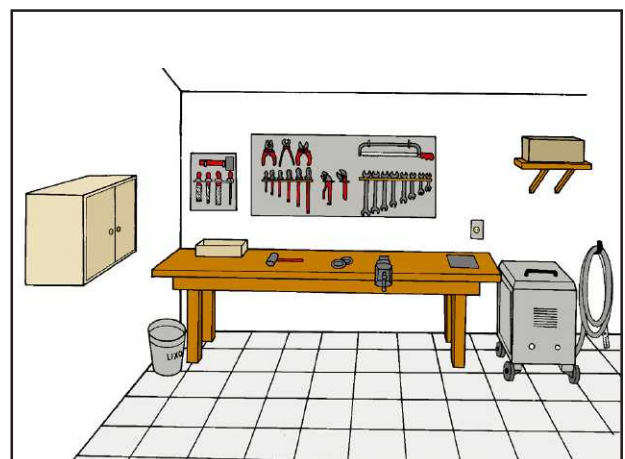


Fig. 6

Introduction

01

- Never stand under hanging loads. Even though the equipment is perfectly safe, there is no reason to tempt fate!

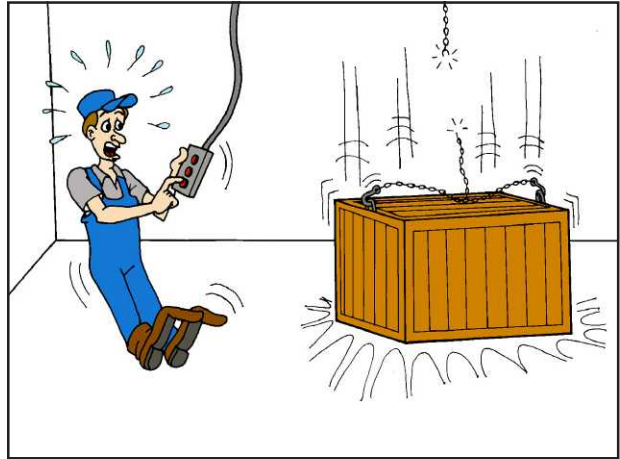


Fig. 7

- Don't leave the engine running in a closed place without ventilation. It only takes a few minutes for the exhaust fumes to start to poison you.
- Don't smoke in the workshop. There is always the risk of fire with all the flammable products.
- Don't work with long hair or with loose clothes. If they get caught in moving machinery, they can cause serious accidents.



Fig. 8

- Before starting the engine of any tractor, check that no one is working on it, and that no tools have been left on it. .
Use a warning notice on the instrument panel to make sure no one turns on the engine if it has parts removed.

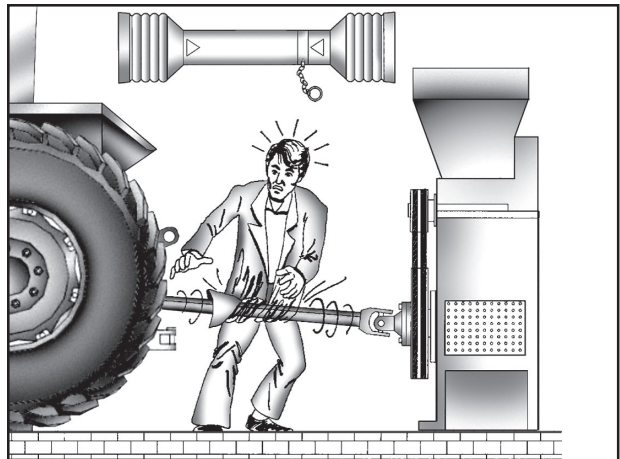


Fig. 9

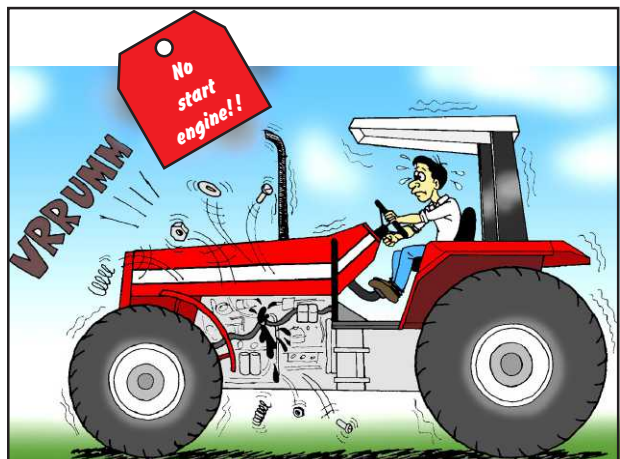


Fig. 10

D. Proper workshop techniques

Most of the repair and service procedures described in this manual are written with the assumption that the assembly you are working on has been completely disassembled and removed from the machine.

Many services, especially of some components, can be performed without removing the assembly from the machine. The mechanic must decide whether it is necessary or not, bearing in mind the level and amount of work to be done and the difficulty of Access.

-{}-The following important point should be remembered and put into practice.

Identify the problem and clean the machine before disassembling it (Fig. 11)

If possible, do a complete diagnosis to determine how much work needs to be done and take all the precautions necessary to prevent any dirt from getting into the hydraulic, fuel and air systems.

Don't mix parts (Fig. 12)

When you take an assembly apart, pay attention to special parts whose position cannot be changed. Separate the different nuts and bolts in divided trays with a screen bottom that permits oil and water to drain away.

Inspect parts during disassembly and wash them well.

Label parts and protect precision or polished surfaces.

Use Original Massey Ferguson Service Parts

Using non-genuine service parts can cause big problems.

Don't believe that parts are the same just because they look the same. Some parts have special properties, known only to the manufacturer. They are the result of special requirements established by intensive studies, engineering tests and field experience.

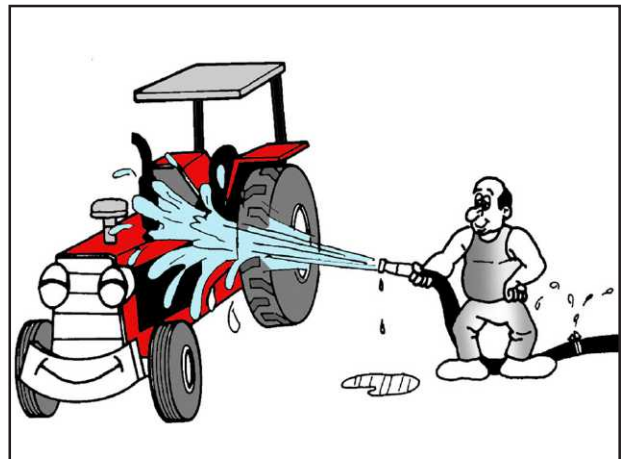


Fig. 1

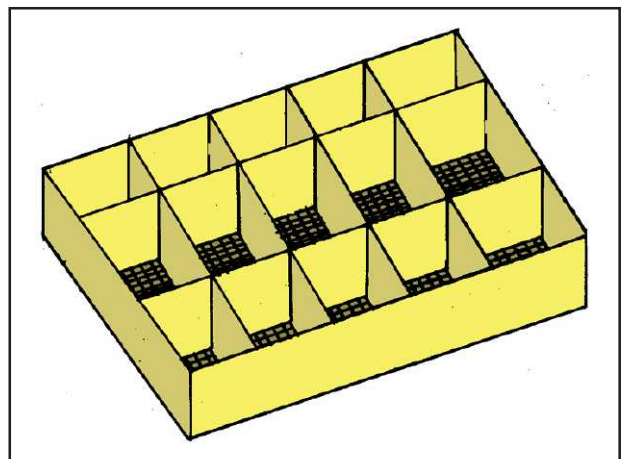


Fig. 2

AGCO has a program for continuous improvements of parts. Many of these improvements cannot be seen with the naked eye.

That is why it is extremely important to use only genuine service parts.

Introduction

01

Rule for tensioning belts and chains

Use the following rule to check belt tension:

Apply a load of **10 to 15 kg** at the center of the largest unsupported distance.

Deflection in the belt or chain should be 1 to 2% of this distance.

In the case of chains, apply sufficient force to bring all of the deflection to one side: should be 1 to 2% of the distance between the centers.

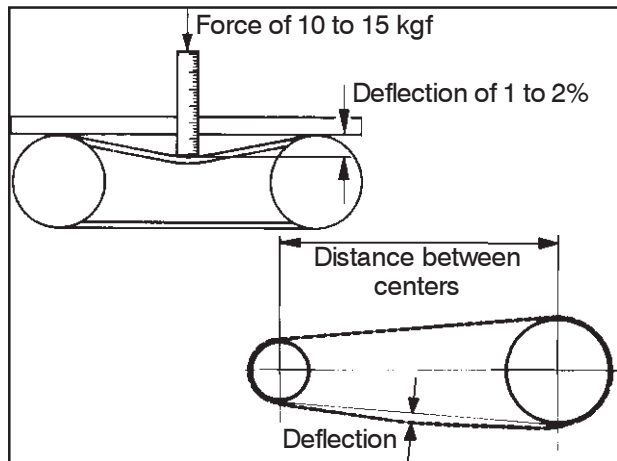


Fig. 3

Interference fitting of bushings, retainers and bearings:

Always use a special tool for this job. When necessary, use a press to apply force. Whenever necessary, apply the recommended force by means of a suitable press.

Improvisation in this case leads to wasted time and damaged parts, which will cause operating problems.

With bushings, check the internal diameter (or external diameter, if that is the case) and make an adjustment if you need to, based on the specifications in this manual for each situation.

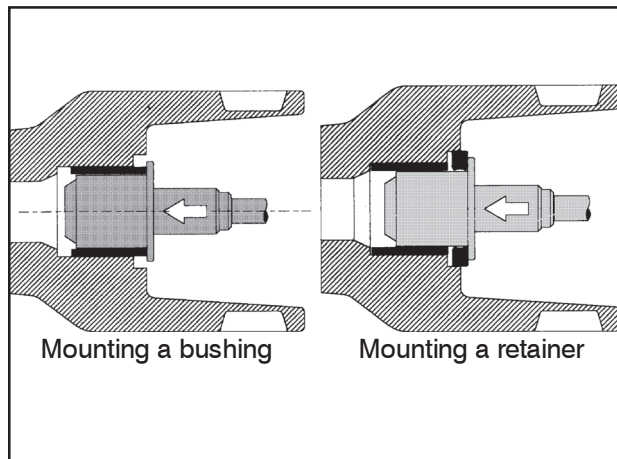


Fig. 4

Use correct punches to remove pulleys, hubs and gears.

Using hammers and levers may damage the parts, and will probably take longer than using the right tools!

NOTE
use a protector for the end of the axle.

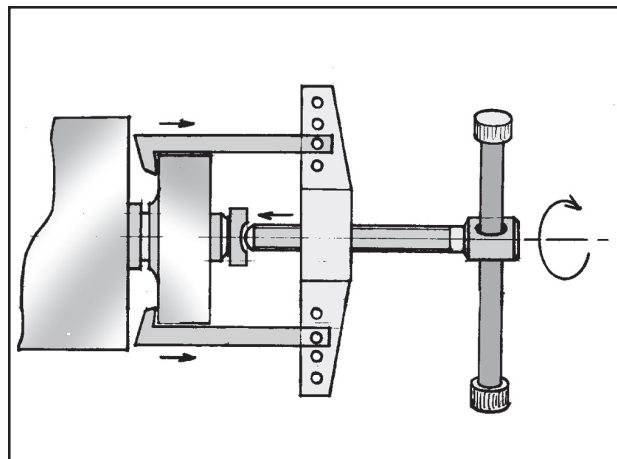


Fig. 5

Use the right tool for each job.

Using the wrong tool just to save a few steps can end up wasting a lot more time after you damage a hex nut, a screw slot...

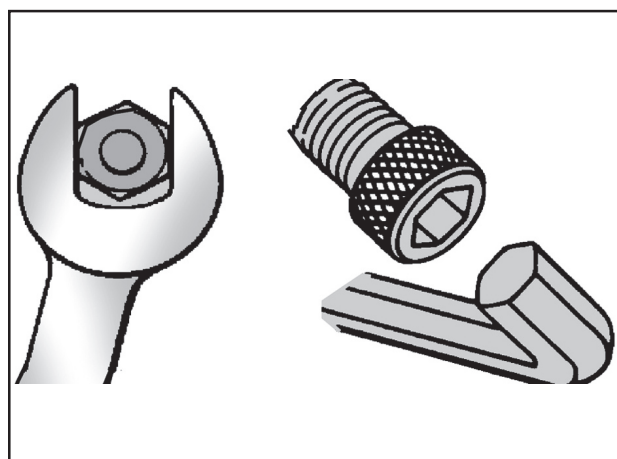


Fig. 6

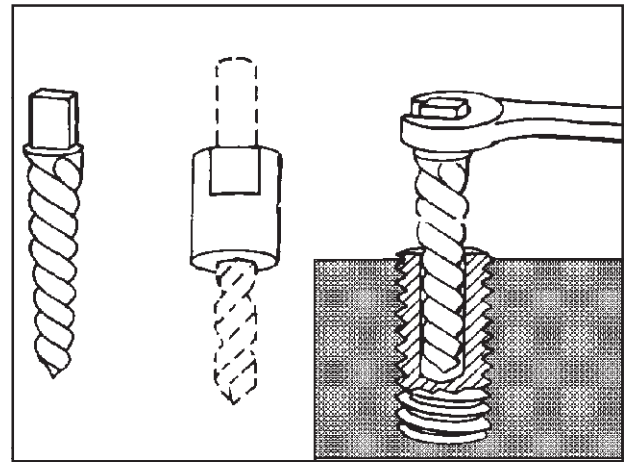
Removing a stud that has broken in place:

Drill a hole about half the diameter of the broken stud and use a bolt extractor with the opposite thread to the stud.

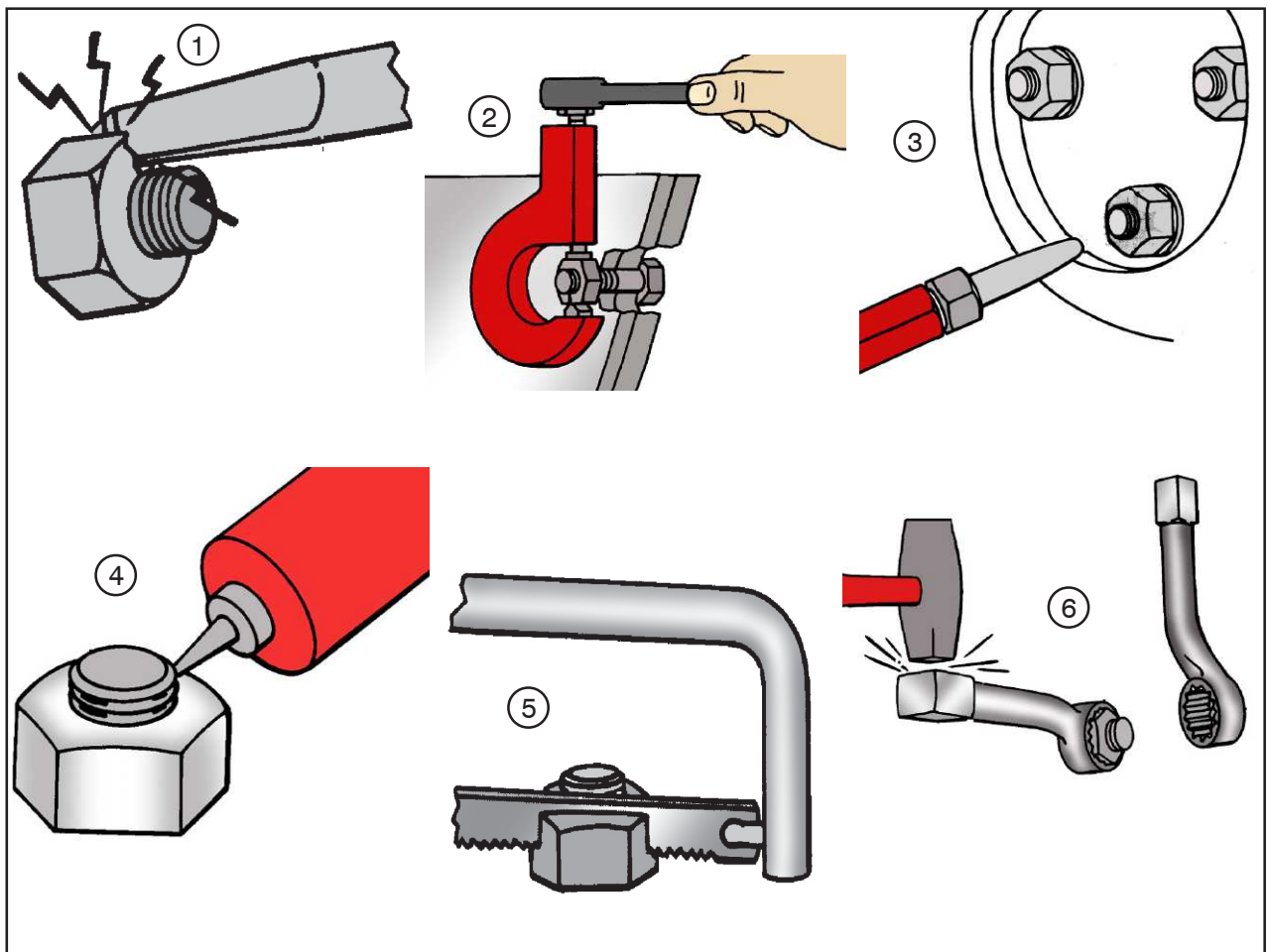
Then remove the stud by turning the bolt extractor counter-clockwise (in the case of a bolt with right hand thread).

**NOTE:**

When you are putting a bolt in a dead end hole, make sure there is no oil or other impurity in the hole. Oil forms a hydraulic block which may damage the housing.

**Fig. 7****01****Removing stuck nuts:**

There are several ways, depending on the case. But, the surrounding parts cannot be damaged either way.

**Fig. 8**

- 1 - Using a chisel
- 2 - With a splitter
- 3 - Heating;

- 4 - Penetrating oil
- 5 - Cut with saw
- 6 - Impact wrench

Introduction

01

Correct locking of nuts and bolts

With a cotter pin or some other means, check what condition it is in. It is usually best to replace them after disassembly.

How to prevent nuts or bolts from shaking loose under normal working conditions

There are also a number of ways. Experience and common sense will tell you the best procedure for each situation.

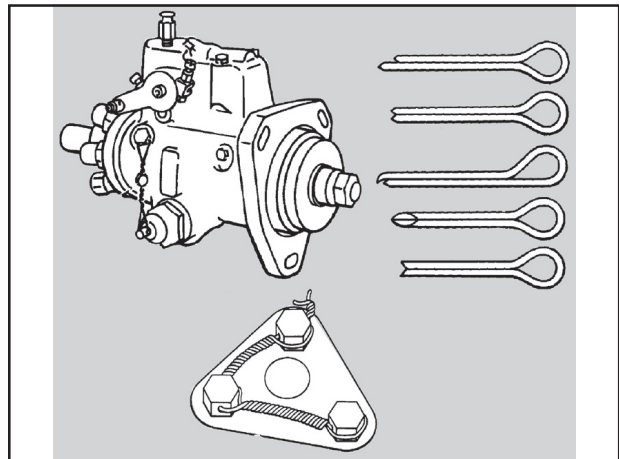


Fig. 9

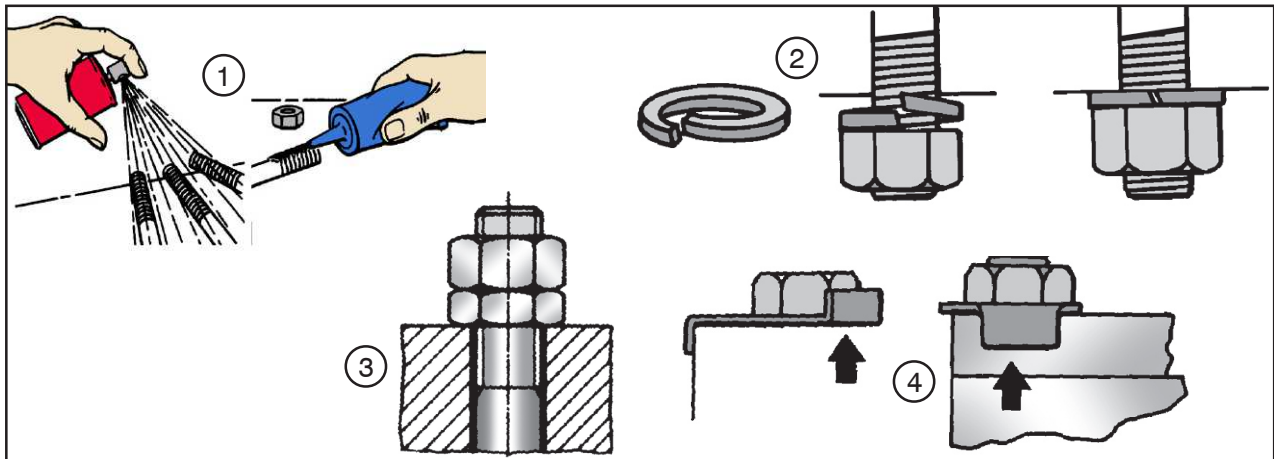


Fig. 10

- 1 - Lock sealant
- 2 - Lock washer
- 3 - Counter-nut
- 4 - Locking plates

Whenever you use force on a wrench, always pull it towards you.

If you push on the wrench and it slips, you are likely to hurt your hands.

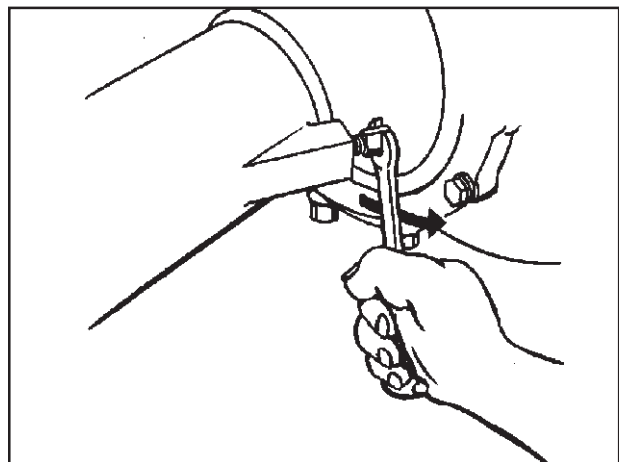


Fig. 11

Use open wrenches the right way.

Working with the wrench reversed puts more stress on it.

Don't improvise.

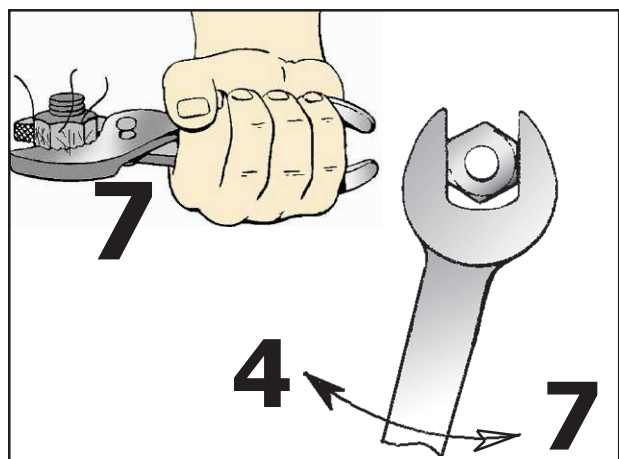


Fig. 12A

Use an open wrench in both grades only to remove hard-to-access bolts, alternately, until the bolt or nut is released.

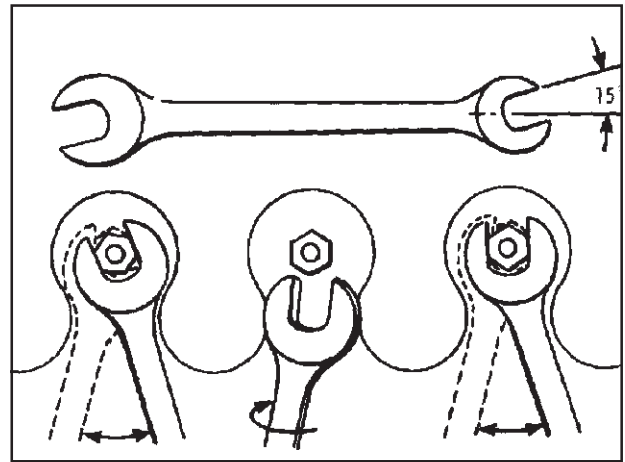


Fig. 12B

Removing nuts from injection tubes

A box wrench is best, but first you need to cut an opening in the wrench for the tube to pass through. Use this wrench only for this purpose.

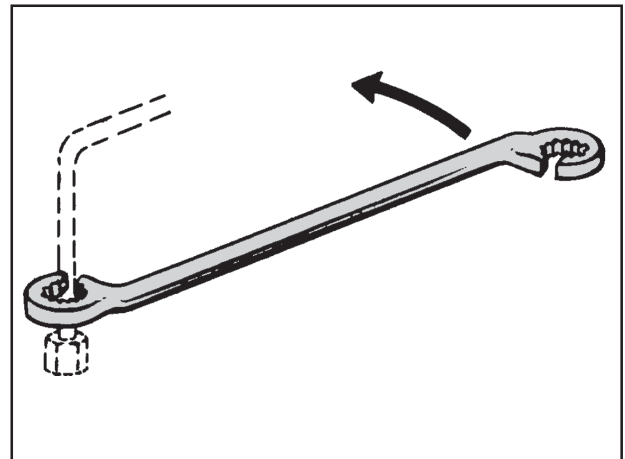


Fig. 13

Mounting parts with interference

Always heat the external part (bearings, hubs, etc) and/or cool the internal part (axles, valve guides and seats, etc).

Heating makes a part expand, and cooling makes it shrink, so using this method you make the fitting easier and reduce damage to the parts.

The heating should never be done with a direct flame, because this would weaken the part and make it brittle.

You should heat the part in hot oil (80 to 90°C / 176 to 194°F) or by electrical induction.

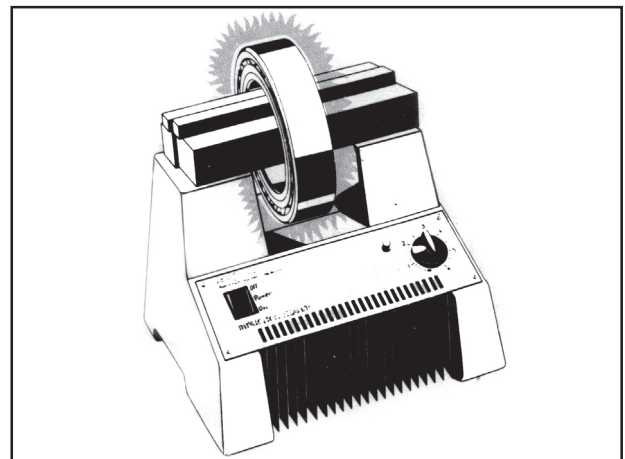


Fig. 14

Cooling can be done in a freezer, or in a bucket of ice or dry ice.



Fig. 15

Introduction

01

Welding

Always disconnect the battery, and remember this point: Attach the negative terminal (-) of the welder to the part you are welding (+). This is to avoid having a high current flowing through parts like bearings and damaging them.

When you are mounting retainers, always use the right tool for the job.

This will make sure the part is mounted in the correct position and undamaged. Otherwise, it may start to leak after just a few hours of operation. In addition, make sure that the seat of the retainer is clean. Lubricate the lip of the retainer. Take special care when the retainer passes over a splined axle, a keyway, etc. The slightest cut on the lip will cause leaks.

Removal and fitting of bearings

To remove bearings, use proper extractors.

It's important that the extractor be supported on the race that is fit with interference, thus avoiding damage to balls and rollers.

When assembling:

- Never hit a bearing directly with a hammer. Use a suitable tool with a cup shape, or similar.
- When mounting a bearing on an axle, press on the inner race; when mounting a bearing in a hole, press on the outer race.

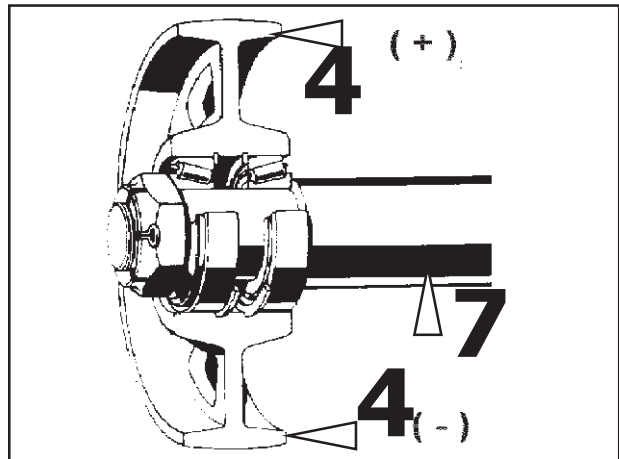


Fig. 16

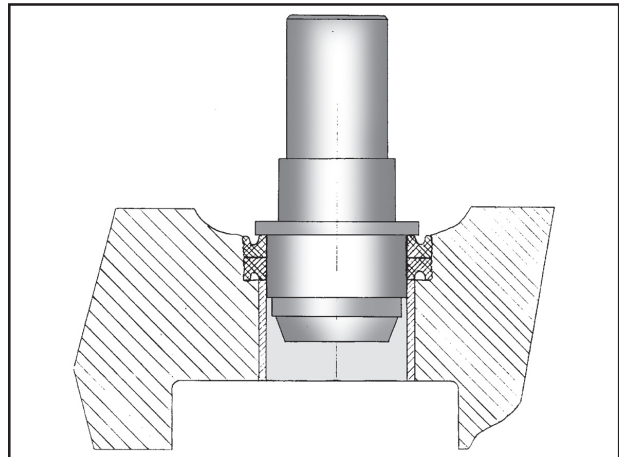


Fig. 17

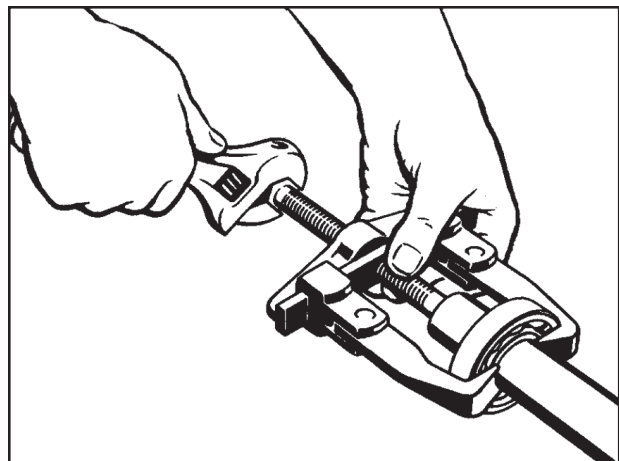


Fig. 18

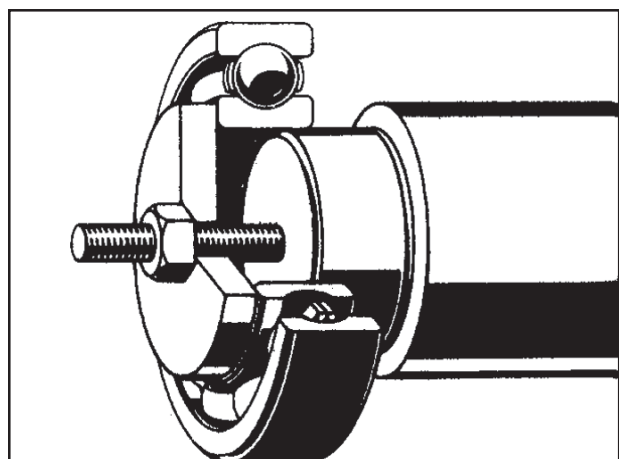


Fig. 19

Protection of dismantled assemblies

If the tractor is going to stay disassembled for a long time, organize the parts and protect them from dust and humidity.

Keep new parts in their packaging until they are to be used.

When putting the parts together, make sure that each one is perfectly clean, with no plugged holes or galleries.

The connectors, tubes and terminals of the fuel injection pump and nozzles should be covered to prevent any impurities from getting in.

You should do the same with the turbocharger, intake and exhaust manifolds, etc.

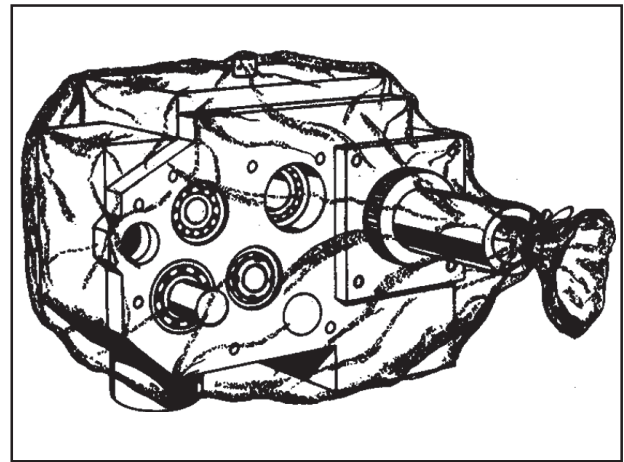


Fig. 20

Precision and certainty in adjustments

When putting the tractor back together, complete every step for one part before moving on to the next part. complete every step for one part before moving on to the next part.

Make all of the adjustments that are recommended. Check as many times as necessary to make sure that everything is exactly right.

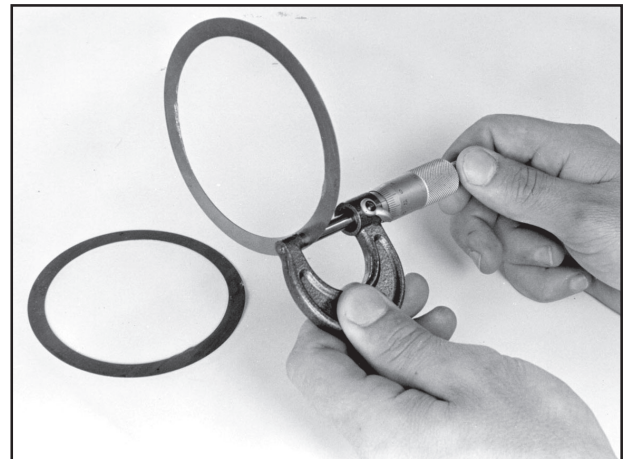


Fig. 21

Adjustment shims

When removing bearing adjustment shims, keep them together, and identify their location. Store them clean and flat.

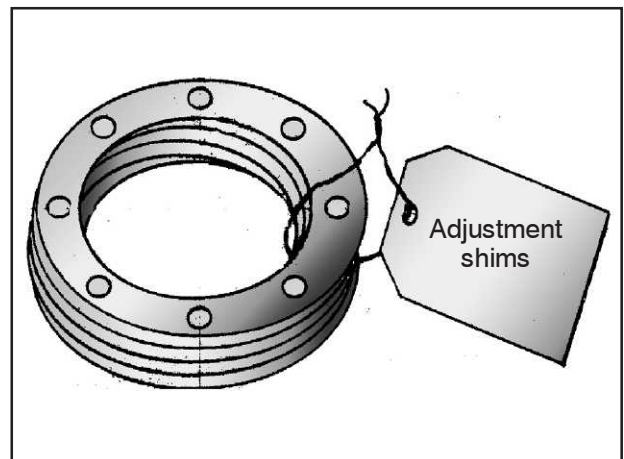


Fig. 22

Electrical cables

Whenever you remove or disconnect a group of wires or cables, identify the correct position of each one with a tape label, to avoid incorrect reassembly.

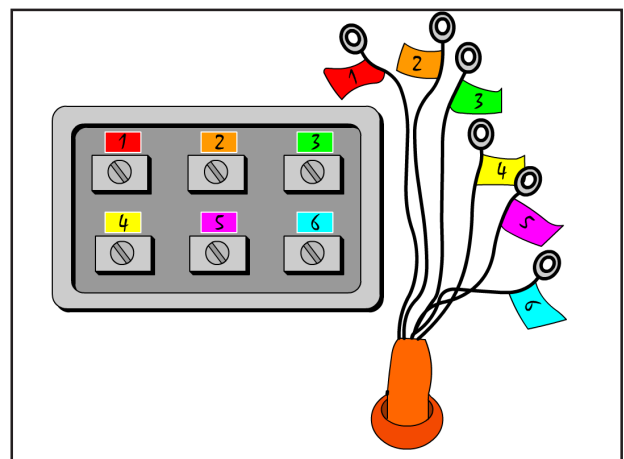


Fig. 23

Introduction

01

Removal of lock rings

In order to remove and refit lock rings or split rings, always use the correct pliers - Fig. 34.

Attention needed: the engagement holes (1) for pliers are usually tapered in order to secure the pliers more easily when removing or fitting rings.

But for that to occur, the rings should be fit so as the small diameter of the tapered holes be towards the pliers.

It will be hard to handle a ring when it is up side down, since the tips of the pliers tend to be forced out of the ring. See picture.

Besides making the operation more difficult, with potential damage to the ring, there is serious risk of the ring being abruptly thrown out, causing serious injuries.

Always wear goggles.

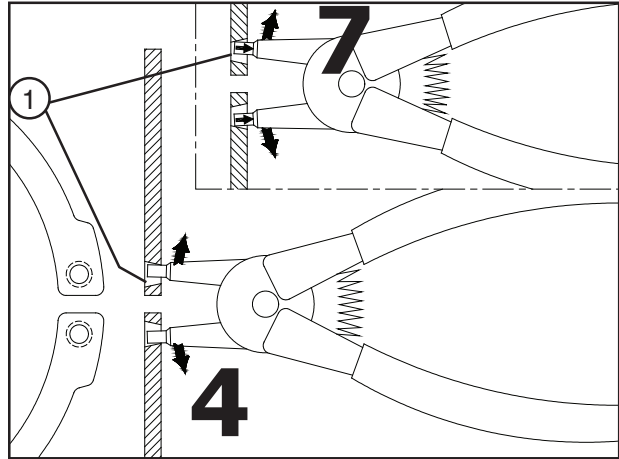


Fig. 24

Massey Ferguson special tools

These should be stored in their boards, properly identified and numbered.



NOTE:

Otherwise, precision measurements like crankshaft wear will be unreliable, and can lead to serious mistakes!

Troubleshooting

This usually takes some experience. Even so, you should follow a logical procedure, which will prove its value on many occasions.

This basically consists of following a defined order of problem solving with a "beginning, middle and end".

Basically, we can define the steps as follows:

- Determine what the problem is, by analyzing the symptoms.
- List the possible causes.
- Keep a record of what you have checked.
- Do the tests in a logical order to find the true cause of the problem.

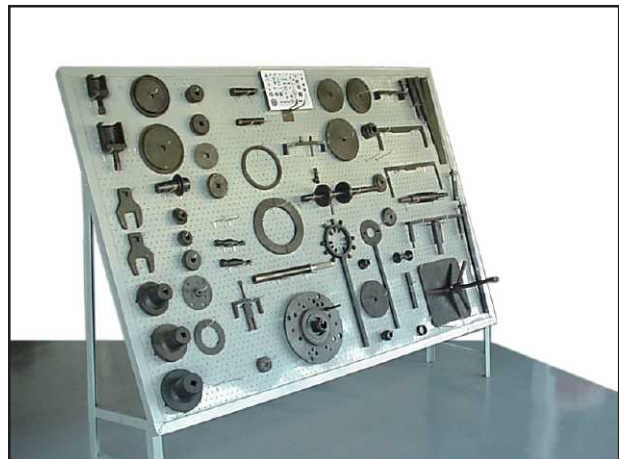


Fig. 25



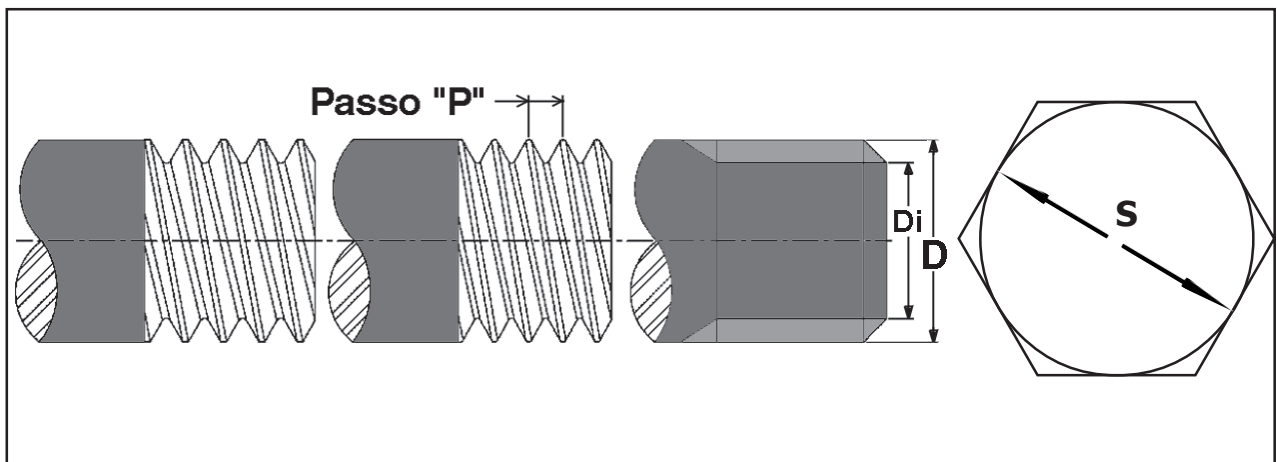
NOTE:

It is very important to talk with the operator of the tractor to get the most detailed description you can of the symptoms.

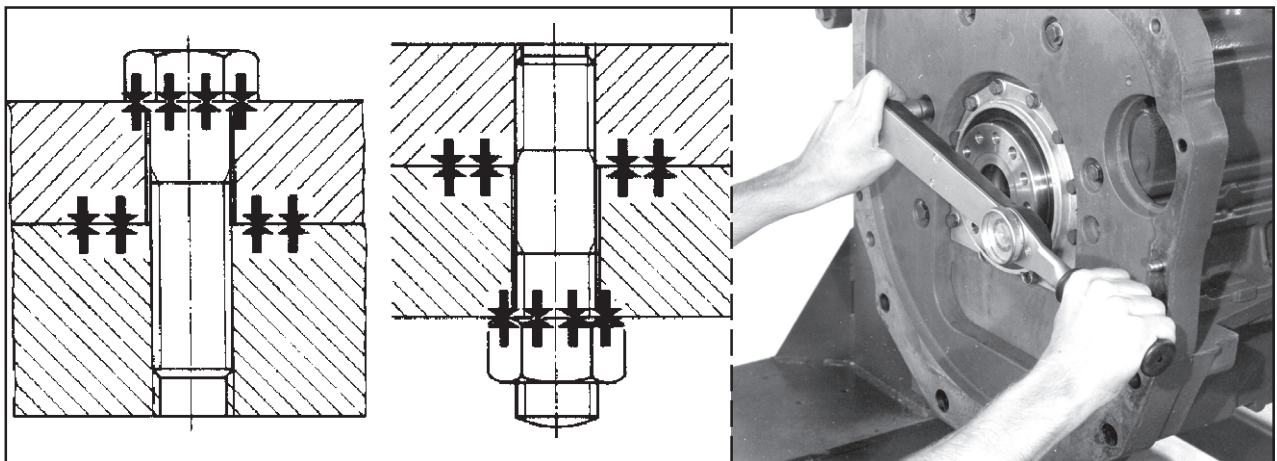
- Work out the time and the parts needed for the job.
- Do the required repairs.
- After repairs and before delivery, perform a final check and if required a practical test by simulating operating conditions.
- If necessary, instruct the operator so as the problem presented be avoided in the future.

E. General table of recommended torques for bolts**Guide for use of the tables**

- ✓ Only use these tables when the torque is not specified.
- ✓ Use tables 1A and 2A for LOW torque:
 - When there is risk of damage to the parts held by the bolt.
 - When there are thick or compressible joints between the components.
 - When the surfaces to be joined are not plane or not parallel.
- ✓ With non-plane, non-milled surfaces against the head of the bolt or nut.
- ✓ Use tables 1B and 2B for NORMAL Torque:
 - When there is no risk of damage to the parts held by the bolt.
 - When it's necessary a higher tightening torque to ensure the bolt or nut is properly secured.
 - When the thread is not lubricated before assembly.
- ✓ The gauge of nuts and bolts, in mm (ISO) or in inches, is the diameter (D) in the drawing below, and not the width (s) of the head.

**Fig. 1**

The illustration below shows why correct tightening is essential, as it determines the tension in the bolt (or stud), and thus the compression in the components.

**Fig. 2**

Introduction

01

E1A - General table of recommended torques for bolts and nuts, in N.m

Metric ISO thread, LOW torque									
Grade	ISO 4.6 = SAE 1			Grade ISO 8.8 = SAE 5			Grade ISO 10.9 = SAE 8		
Gauge	Nom.	Max.	Min.	Nom.	Max.	Min.	Nom.	Max.	Min.
M3	0.5	0.6	0.4	1.2	1.4	1.0	1.7	1.9	1.5
M4	1.15	1.3	1.0	2.9	3.3	2.5	4.0	4.6	3.4
M5	2.1	2.4	1.8	5.6	6.4	4.8	8.0	9.2	6.8
M6	3.6	4.0	3.2	9.5	11.0	8.0	14.0	16.0	12.0
M8	8.8	10.0	7.6	24.0	28.0	20.0	33.0	37.0	29.0
M10	17.5	20.0	15.0	48.0	56.0	40.0	67.0	77.0	57.0
M12	30.0	34.0	26.0	84.0	96.0	72.0	115.0	130.0	100.0
M16	78.0	88.0	68.0	185.0	210.0	160.0	280.0	320.0	240.0
M20	150.0	170.0	130.0	395.0	450.0	340.0	560.0	640.0	480.0
M24	260.0	290.0	230.0	670.0	770.0	570.0	920.0	1040.0	800.0
M30	500.0	570.0	430.0	1300.0	1400.0	1100.0	1950.0	2200.0	1700.0
M36	800.0	1000.0	760.0	2300.0	2600.0	2000.0	3350.0	38.00	2900.0

E1B - General table of recommended torques for bolts and nuts, in N.m

Metric ISO thread, NORMAL torque									
Grade	ISO 4.6 = SAE 1			Grade ISO 8.8 = SAE 5			Grade ISO 10.9 = SAE 8		
Gauge	Nom.	Max.	Min.	Nom.	Max.	Min.	Nom.	Max.	Min.
M3	0.6	0.7	0.5	1.5	1.7	1.3	2.1	2.4	1.8
M4	1.4	1.6	1.2	3.6	4.1	3.1	5.0	5.7	4.3
M5	2.6	3.0	2.2	7.0	8.0	6.0	10.0	11.5	8.5
M6	4.5	5.0	4.0	12.0	14.0	10.0	17.0	20.0	14.0
M8	11.0	12.5	9.5	30.0	35.0	25.0	41.0	46.0	36.0
M10	22.0	25.0	19.0	60.0	70.0	50.0	84.0	96.0	72.0
M12	38.0	43.0	33.0	105.0	120.0	90.0	140.0	160.0	120.0
M16	97.0	110.0	84.0	230.0	260.0	200.0	350.0	400.0	300.0
M20	185.0	210.0	160.0	490.0	560.0	420.0	700.0	800.0	600.0
M24	320.0	360.0	280.0	840.0	960.0	720.0	1150.0	1300.0	1000.0
M30	630.0	720.0	540.0	1600.0	1800.0	1400.0	2450.0	2800.0	2100.0
M36	1100.0	1250.0	950.0	2900.0	3300.0	2500.0	4200.0	4800.0	3600.0

E2A - General table of recommended torques for bolts and nuts, in N.m

Inches thread, LOW torque									
Grade	ISO 4.6 = SAE 1			Grade ISO 8.8 = SAE 5			Grade ISO 10.9 = SAE 8		
Gauge	Nom.	Max.	Min.	Nom.	Max.	Min.	Nom.	Max.	Min.
1/4"	5.6	6.4	4.8	10.4	12.0	8.8	15.5	18.0	13.0
5/16"	11.3	13.0	9.6	21.0	24.0	18.0	29.5	34.0	25.0
3/8"	21.0	24.0	18.0	36.5	42.0	31.0	52.0	60.0	44.0
7/16"	33.0	38.0	28.0	60.0	69.0	51.0	84.0	96.0	72.0
1/2"	50.0	57.0	43.0	92.0	104.0	80.0	125.0	140.0	110.0
5/8"	100.0	110.0	90.0	185.0	210.0	160.0	260.0	300.0	220.0
3/4"	175.0	200.0	150.0	325.0	370.0	280.0	460.0	530.0	390.0
7/8"	290.0	330.0	250.0	530.0	610.0	450.0	745.0	850.0	640.0
1"	435.0	500.0	370.0	785.0	900.0	670.0	1120.0	1280.0	960.0
1 1/8"	450.0	510.0	390.0	970.0	1100.0	840.0	1560.0	1760.0	1360.0
1 1/4"	630.0	720.0	540.0	1400.0	1600.0	1200.0	2240.0	2560.0	1920.0
1 1/2"	1130.0	1300.0	960.0	2400.0	2700.0	2100.0	3800.0	4320.0	3280.0

E2B - General table of recommended torques for bolts and nuts, in N.m

Inches thread, NORMAL torque									
Grade	ISO 4.6 = SAE 1			Grade ISO 8.8 = SAE 5			Grade ISO 10.9 = SAE 8		
Gauge	Nom.	Max.	Min.	Nom.	Max.	Min.	Nom.	Max.	Min.
1/4"	7	8	6	13	15	11	19	22	16
5/16"	14	16	12	26	30	22	37	43	31
3/8"	26	30	22	46	53	39	65	75	55
7/16"	41	47	35	75	86	64	105	120	90
1/2"	63	72	54	115	130	100	160	180	140
5/8"	125	140	110	230	260	200	325	370	280
3/4"	220	250	190	405	460	350	575	660	490
7/8"	360	410	310	660	760	560	930	1060	800
1"	540	620	460	980	1120	840	1400	1600	1200
1 1/8"	560	640	480	1220	1390	1050	1950	2200	1700
1 1/4"	790	900	680	1750	2000	1500	2800	3200	2400
1 1/2"	1400	1600	1200	3000	3400	2600	4750	5400	4100

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F. Technical units

1. Conversion table

1 - Distance

You have:	You should	To get:
- 1 meter	Multiply by 39.37	inches (in. or “)
- 1 meter.	Multiply by 1.094	yards (y)
- 1 centimeter.	Multiply by 0.3937	inches (in. or “)
- 1 millimeter.	Multiply by 0.03937	inches (in. or “)
- 1 kilometer.	Multiply by 0.622	miles
- 1 foot.	Multiply by 30.48	centimeters (cm)
- 1 foot.	Multiply by 0.3048	meters (m)
- 1 foot.	Multiply by 12.0	inches (in. or “)
- 1 inch.	Multiply by 25.4	millimeters (mm)
- 1 inch.	Multiply by 0.0833	feet (')
- 1 yard.	Multiply by 0.914	meters (m)
- 1 mile (statute)	Multiply by 1.609.0	meters (m)
- 1 mile (nautical)	Multiply by 1.853.0	meters (m)
- 1 knot.	Multiply by 21.938	meters (m)
- 1 fathom.	Multiply by 1.828	meters (m)
- 1 league (braz.)	Multiply by 6.600.0	meters (m)

2 - Mass

You have:	You should	To get:
- 1 kilogram	Multiply by 35.27	ounces (oz)
- 1 kilogram.	Multiply by 1000	grams (g)
- 1 kilogram.	Multiply by 2.205	pounds (lb)
- 1 ton.	Multiply by 1000	kilograms (kg)
- 1 pound force	Multiply by 0.453	kilograms (kg)
- 1 ounce.	Multiply by 28.35	grams (g)
- 1 arroba (braz. = 15 kg.)		Multiply by 14.7 kilograms (kg)

3 - Force

You have:	You should	To get:
- 1 kgf	Multiply by 9.81	newtons (N)
- 1 kgf	Multiply by 2.205	pounds force (lbf)
- 1 pound force	Multiply by 0.453	kilograms force (kgf)
- 1 newton.	Multiply by 0.102	kilograms force (kgf)
- 1 pound force	Multiply by 4.448	newtons (N)

4 - Speed

You have:	You should	To get:
- 1 km/h	Multiply by 0.6214	miles per hour (mph)
- 1 km/h	Multiply by 0.2778	meters per second (m/s)
- 1 mph	Multiply by 1.6093	kilometers per hour (km/h)

5 - Volume

You have:	You should	To get:
- 1 cubic meter	Multiply by 1000	liters (l)
- 1 cubic meter.	Multiply by 35.31	cubic feet (feet ³)
- 1 liter	Multiply by 1000	cubic centimeters (cm ³)
- 1 liter	Multiply by 0.001	cubic meters (m ³)
- 1 liter	Multiply by 0.264	US gallons (gal)
- 1 liter	Multiply by 2.12	pints (pt)
- 1 1 cubic inch.	Multiply by 16.387	cubic centimeters (cm ³)
- 1 1 cubic foot.	Multiply by 0.02832	cubic meters (m ³)
- 1 1 cubic foot.	Multiply by 28.32	liters (l)
- 1 US gallon	Multiply by 3.785	liters (l)
- 1 UK gallon	Multiply by 4.546	liters (l)
- 1 pint.	Multiply by 0.47	liters (l)
- 1 quart (UK)	Multiply by 1.137	liters (l)
- 1 quart (US)	Multiply by 0.946	liters (l)
- 1 bushel.	Multiply by 35.24	liters (l)
- 1 ounce.	Multiply by 30.0	milliliters (ml)

6 - Area

You have:	You should	To get:
- 1 square inch	Multiply by 6.452	square centimeters (cm ²)
- 1 square meter.	Multiply by 10000	square centimeters (cm ²)
- 1 square meter.	Multiply by 10.76	square feet (foot ²)
- 1 square foot.	Multiply by 144.0	square inches (inch ²)
- 1 square foot.	Multiply by 929.03	square centimeters (cm ²)
- square yards (yd ²).	Multiply by 0.836	square meters (m ²)
- 1 square meter.	Multiply by 1.196	square yards (y. ²)
- 0.40 ha	Multiply by 4.047.0	square meters (m ²)
- 1 hectare	Multiply by 4.046.86	square meters (m ²)
- 1 alqueire	Multiply by 2.4	hectares (ha)

7 - Pressure

You have:	You should	To get:
- 1 kgf/cm ²	Multiply by 0.981	bar
- 1 bar	Multiply by 1.019	kilograms per square centimeter (kgf/cm ²) = 1 atmosphere (atm)
- 1 atm	Multiply by 1.0132	bar
- 1 kgf/cm ²	Multiply by 101.325.0	pascal (Pa)
- 1 kgf/cm ²	Multiply by 14.22	pounds per square inch (lbf/pol ² =PSI)
- 1 bar	Multiply by 14.50	pounds per square inch (lbf/pol ² =PSI)
- 1 MPa	Multiply by 145.038	pounds per square inch (lbf/pol ² =PSI)
- 1 PSI	Multiply by 0.00689	megapascal (Mpa) = 10 ⁶
- 1 bar	Multiply by 394.13	inch H ₂ O
- 1 inch Hg	Multiply by 344.678	mm H ₂ O

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8 - Flow rate

You have:

- 1 l/min
- 1 gpm

You should

- Multiply by 0.264
- Multiply by 3.788

To get:

- gallons per minute (gpm)
- liters per minute (l/min)

9 - Torque

You have:

- 1 N.m
- 1 N.m
- 1 N.m
- 1 lb.in
- 1 lb.foot
- 1 kgf.m
- 1 kgf.m
- 1 kgf.m
- 1 N.m
- 1 kgf.cm
- 1 N.m
- 1 N.m
- 1 lbf.in

You should

- Multiply by 8.851
- Multiply by 0.738
- Multiply by 10.0
- Multiply by 0.113
- Multiply by 1.356
- Multiply by 7.239
- Multiply by 86.8
- Multiply by 9.81
- Multiply by 10.0
- Multiply by 0.10
- Multiply by 0.102
- Multiply by 8.851
- Multiply by 0.113

To get:

- pounds-force x inch (lbf.pol)
- pounds-force x foot (lbf.foot)
- kilograms-force x centimeter (kgf.cm)
- newtons x meter (N.m)
- newtons x meter (N.m)
- pounds-force x foot (lbf.foot)
- pounds-force x inch (lbf.pol)
- newtons x meter (N.m)
- kilo. force x centimeter (kgf.cm)
- newtons x meter (N.m)
- kilogram-meter (kgf.m)
- pound force (lbf.in)
- newtons x meter (N.m)

10 - Power

You have:

- 1 hp
- 1 hp
- 1 hp
- 1 hp
- 1 kW
- 1 kW
- 1 kW

You should

- Multiply by 735.7
- Multiply by 0.9863
- Multiply by 1.014
- Multiply by 746
- Multiply by 1.36
- Multiply by 1.341
- Multiply by 1000

To get:

- watts (W)
- horse power (hp)
- cv (or PS)
- watts (W)
- cv (or PS)
- horse power (hp)
- watts (W)

11 - Temperature

You have:

- °C

Use the formula:

- (°C x 1.8) + 32

To get:

- °F (Fahrenheit)

Examples: 50 °C = 122 °F -10 °C = 14 °F

- °F 5/9 x (°F - 32)

- °C (Celsius)

Examples: 60 °F = 15.5 °C 49 °F = 9.44 °C

Note the coincidence: -40 °F = - 40 °C

2. Equivalence between units - Imperial and SI systems

Quantities	Units		
	IMPERIAL SYSTEM	INTERNATIONAL SYSTEM - SI	PRACTICAL OR DERIVED UNITS
Distance	foot	m	mm, cm, km
Area	foot ²	m ²	mm ² , cm ² , km ² , ha, alqueire...
Volume	foot ³	m ³	mm ³ , cm ³ , l, gallon
Mass	lb	kg	g
Specific mass	lb/foot ³	kg/m ³	g/cm ³ , g/l, kg/l
Specific volume	foot ³ /lb	m ³ /kg	cm ³ /g, l/kg
Power	lbf	newton - N	kgf, dyne
Speed	foot/s	m/s	km/h, m/min
Speed	grad/s	rad/s	rpm, rps
Torque	lbf.foot	N.m	m.kgf, cm.kgf
Ideal pressure	lbf/foot ²	N/m ² (or Pa	kgf/m ² , kgf/cm ² , kgf/mm ²
Flow rate	foot ³ /s	m ³ /s	m ³ /h, l/h, l/min, l/s
Time	s	s	min, h
Energy	lbf.foot	J	kgf.m
Power	Btu	W	hp, cv

3. Prefixes of technical units

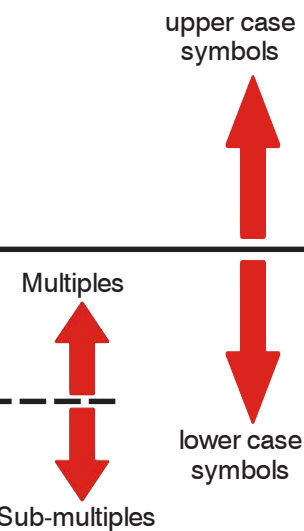
- ✓ To form multiples or sub-multiples of a base unit, simply add the desired prefix/symbol in front of it. .
 To multiply the unit volt by 1000: *kilo + volt = kilovolt* and $k + V = kV$.
 To divide the unit volt by 1000: *milli + volt = millivolt* and $m + V = mV$.
- 4 These prefixes can also be used with non-SI units:
 millibar, kilocalorie, megaton, hectoliter, etc
- ✓ For historical reasons, the name of the basic unit of mass has a prefix: kilogram. For this reason, multiples and submultiples of this unit are formed using the gram.

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Name of prefixes

Name	Symbol	Multiplication factor
yotta	Y	$10^{24} = 1\,000\,000\,000\,000\,000\,000\,000\,000$
zetta	Z	$10^{21} = 1\,000\,000\,000\,000\,000\,000\,000\,000$
exa	S	$10^{18} = 1\,000\,000\,000\,000\,000\,000\,000$
peta	P	$10^{15} = 1\,000\,000\,000\,000\,000\,000$
tera	T	$10^{12} = 1\,000\,000\,000\,000\,000$
giga	G	$10^9 = 1\,000\,000\,000$
mega	M	$10^6 = 1\,000\,000$
kilo	k	$10^3 = 1\,000$
hecto	h	$10^2 = 100$
deca	da	10
deci	d	$10^{-1} = 0.1$
centi	c	$10^{-2} = 0.01$
mili	m	$10^{-3} = 0.001$
micro	μ	$10^{-6} = 0.000\,001$
nano	n	$10^{-9} = 0.000\,000\,001$
pico	P	$10^{-12} = 0.000\,000\,000\,001$
femto	f	$10^{-15} = 0.000\,000\,000\,000\,001$
atto	to	$10^{-18} = 0.000\,000\,000\,000\,000\,001$
zepto	Z	$10^{-21} = 0.000\,000\,000\,000\,000\,000\,001$
yocto	y	$10^{-24} = 0.000\,000\,000\,000\,000\,000\,000\,001$



G. Products for locking and sealing

Loctite 241/242: Threadlocking liquid with medium strength against disassembly for nuts and bolts.

Threadlocking liquid with medium strength against disassembly for nuts and bolts. Simplifies assembly, eliminates mechanical locking systems, prevents loosening through vibration, prevents corrosion and rusting, prevents leakage, eliminates retightening and permits disassembly with standard tools.

Loctite 277: High strength threadlocker for nuts, bolts and studs.

Simplifies assembly, eliminates mechanical locking systems, prevents loosening through vibration, prevents corrosion and rusting, prevents leakage, eliminates retightening.

Allows disassembly with standard tools.

Loctite 290: Loctite 290 Locks and seals bolts after assembly

Penetrates by capillary action, filling all empty spaces. Eliminates mechanical locking systems, prevents loosening through vibration, prevents corrosion and rusting, prevents leakage, eliminates retightening and seals micropores. Allows disassembly with standard tools.

Loctite 567: Seals threads with Teflon®.

For any threaded assembly. Prevents clogging, does not contaminate the system, instantly seals NPT connections to 17 bar (250 psi). Simplifies positioning of parts and equipment such as connections.

Loctite 601: Fastens bearings, bushings and other cylindrical parts

Allows assembly by sliding parts into place and prevents corrosion between parts. Eliminates necessity for polished finish of parts; disassembly with standard tools.

Loctite 660: Fastens bearings and bushings with large clearance, woodruff key, etc.

Fills larger gaps, not requiring plane surfaces. Fastens and seals parts.

Allows disassembly with standard tools.

Liquid gaskets

If there is no risk of oil contamination, you can use



Loctite 515, 598, 599 or Three Bond.

However, when bonding housings containing oil, we recommend you apply degreaser Loctite 7070 in the entire surface and only after apply a continuous thread of **Loctite 509** along the entire surface.

Failure to comply with these recommendations will contaminate the oil and clog the filters.

Examples: hydraulic cover, mounted on central housing, upper covers of all gearboxes and union of gearbox housing with central housing (rear axle).

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Method of application for LOCTITE products

- a) Remove all traces of old glue, dirt, grease, and oxidation.
For that, use wire brushes or sandpaper or chemical remover.
- b) Use a dry cloth on the points where adhesives are applied.
- c) Degrease the components with proper solvent such as LOCTITE 706.
- d) Allow time for the solvent to evaporate completely.
- e) Apply the recommended product by using a clean brush.

In order to apply adhesive as a thread use the opening of the package.

Grease application

When using grease in components that are in contact with transmission oil, use special grease, which can be diluted in oil, thus preventing filters and circuits from being clogged.



NOTES:

- ✓ *After applying the product, assemble as soon as possible.*
- ✓ *Do not use product in excess. To avoid:*
 - *Locking adjacent components.*
 - *Difficulty in curing, which usually only occurs with lack of oxygen.*
 - *Oil contamination inside mechanical assemblies and/or obstruction of hydraulic or lubrication circuits.*
- ✓ *The bolts should be tightened and the parts should be joined as soon as possible. After curing (drying) the adhesive, do not tighten again or the sealing lock or film may be broken.*

H. Paint specific for tractor paintwork

Components	Color specification (Massey Ferguson)
- Monobloc (powertrain = front axle, engine, transmission, center housing, rear axle) - Hydraulic control valve support - Stabilizer support - Front weight support - Front weight, engine shield - Rear weights (wheel weights) - Lift system (arms, stabilizers, leveling arms, etc.) - Hydraulic control valve, drawbar - Front fender support - Chassis and driveline shield - Exhaust tube support (L6000 & L7000)	Fendt gray (Fendt Gray-MF 50) EM A 034
- ROPS of L200, L400, L500, and L5000 - Air filter, pre-filter, and filter support - Levers in general, steering column - Sills (no footstep), front grille - Deflectors (shield) - Instrument panel frame - Mirror rods, hydraulic quadrant - Toolbox, seat frame - Ladders, tank support - Cab frame, battery case - Steering column cover plate (metal) - Console of L600 and L5000 - Steering frame and pedals in general - Cooling and intake system tubes	Shine black (Shine Black) EM A 007
- Upper and side hood - Mini hood (no footstep) - Rear fenders - Seat deck no foot step - Platforms - Nose	Red (Red - MF 50) EM A 003
- All platforms, cabs, and footstep - Seat upholster, wheel rims - Consoles and cover plates (platform and cab) - Cab mats - Canopy frame (platform and footstep) - ROPS of L600, L6000, and L7000	Smoke gray (Smoke Gray) EM A 022
- Black plastic parts in general (no paint) - Front fenders - Fender extensions (rear and front) - Fuel tank	Opaque black (Opaque Black) EM A 006
- Fender edges of platform L6000 and L7000 - Plastic parts in general painted in black	Textured opaque black (Textured Black) EM A 018
- Muffler and exhaust system tubes - Muffler shield - Turbine deflector - Ejectors (venturi)	High temp black (High Temp. Black) EM A 015

Introduction

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I. AGCO Environmental Policy

AGCO do Brasil Comércio e Indústria LTDA, at its plant in Canoas city, Rio Grande do Sul state, is committed to the development, production and sales of products aimed at meeting the mechanization needs of agribusiness, both in the Brazilian and foreign markets, always adopting the most appropriate alternatives for the preservation of the Environment.

Main Guidelines

- 1 - Comply with applicable regulations and standards, seeking to stay up-to-date with the latest regulatory trends.
- 2 - Continually improve environmental performance. Adopt pollution prevention practices aimed at making rational use of natural resources and reducing noise levels and solid, liquid and gaseous wastes.
- 3 - Be proactive in the internal and external community by keeping a channel of communication open for information related to environmental concerns and actions.
- 4 - Promote a sense of environmental responsibility by providing further training to employees and raising the awareness of suppliers and service providers.

How will we achieve these goals?

Working together with the environment will ensure that the company survives in the future. With this philosophy in mind, AGCO planned and implemented its environmental policy by putting into practice an Environmental Management system and a program for Cleaner Production.

What is ISO 14000?

It is a set of environmental management standards defined by the International Standards Organization (ISO). The ISO 14000 series consists of 6 sets of standards, each one dealing with a specific environmental issue.

ISO 14001 Standard applies to AGCO, because it deals with environmental management systems.

Environmental Management System - EMS

An EMS is a set of procedures used to manage a company in order to obtain the best relationship with the environment.

The implementation of this system aims at fully analyzing all of the company's activities, products and services in terms of their influence on the environment, and at taking on an ongoing commitment to environmental quality.



Fig. 1

Environmental issues

Greenhouse effect

It is the rise in temperature that the Earth experiences caused by the build-up of gases such as carbon dioxide (CO₂) and methane (CH₄) in the atmosphere. Carbon dioxide is produced in industrial processes, in the burning of fossil fuels and in fires.

"Global warming can melt the polar ice caps and cause flooding".



Fig. 2

Reduction in the ozone layer.

The ozone (O₃) acts as a filter in the upper atmosphere, shielding us from the sun's harmful rays. Some gases can destroy the ozone, causing a hole in the ozone layer. These gases include chloroflourocarbons (CFCs), which are used in refrigeration.

"As a result, it is estimated that 100,000 new cases of skin cancer are reported every year".

The population explosion

It is estimated that by the year 2020, the earth's population will have an addition of 8 billion people if compared with today's population. The majority of these people will live under unsafe conditions, without a water supply system, education or medical assistance.

"Population growth, together with adverse conditions, is creating an unsustainable situation for the planet."

Sustainable development

This is a new type of development, which aims at balancing social and economic needs with the needs for environment protection and natural resources conservation so as to ensure the sustainability of human life on earth.

It is believed that sustainable development is the only way of dealing with poverty, waste, environmental degradation and social problems.

Recommendations to customers and users of MF tractors

With regard to the environmental issues discussed above, here are some suggestions to help increase your awareness, as such issues affects the use and maintenance of the machine throughout its life.

- 1 - Adopt proper agricultural practices in order to minimize the impact on the environment.
- 2 - Get the best performance from your tractor by adjusting implements correctly, using adequate implements and operating under proper conditions (gear, rpm, speed...) according to this Instruction Book.

- 3 - Take full advantage of your machine for as long as possible. You can achieve this through proper preventative maintenance, as described in this instruction book.
- 4 - Carry out *an integrated pest management*, which consists of procedures and crop monitoring, with the aim of using pesticides only when needed and at the correct amount.
- 5 - Do not waste fertilizers, seeds, pesticides, etc. Use all products in the correct amount.
- 6 - Avoid broadcast burning at all costs, and adopt appropriate cultivation techniques, such as straw planting or no-tillage.
- 7 - Check what the law establishes for parts and fluids changed in your tractor.

See some examples:

- * **Metals**
There are many advantages in recycling metals. Each metric ton of steel recycled represents a saving of 1,140 kg of iron ore, 454 kg of charcoal, and 18 kg of lime.
- * **Oils and fluids:**
During use, these fluids accumulate impurities and suffer oxidation. Therefore, they must be changed.
Never throw oil or fluids directly into the environment. Take them to the gas station where you bought them. Oils can be re-refined or, as a last resort, incinerated in industrial dumps regulated by legislation.
- * **Batteries**
Batteries can have a disastrous effect on the environment if dumped anywhere.
Send them to a recycling station, or return them to the supplier, who is responsible for disposing them properly.

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- * **Tires**
Energy generation and retreading were the first ways of recycling tires. With improvements in technology, new options arose, such as mixing with asphalt.
Retreading is now widely practiced, and lengthens the life of tires by 40%, but the majority of used tires still end up in garbage dumps, by the roadside, or even in the back yards, where they become breeding places for insects that spread diseases.
- * **Plastics**
Plastics are made from oil, and when recycled they consume only 10% of the energy required to make the same amount from raw materials. Like glass, plastic is also not biodegradable. Therefore, because of this and its increasing usage, recycling becomes essential.
- * **Glass**
Waste glass has a number of uses, including the production of asphalt, foam, fiberglass, costume jewelry and reflective paints.
- * **Cardboard**
Fifty (50) kilos of used paper transformed in new paper prevents a tree from being cut.

J. Compulsory recycling of batteries



ATTENTION:

Return your used battery to the Dealership when replacing it. In compliance with CONAMA resolution 257/99 from 30/06/99.

CONAMA resolution

CONAMA - The Brazilian Council for Environment - through resolution 257 from June 30th 1999, establishes standards and responsibilities regarding used battery management and disposal. This resolution determines that all establishments that distribute or resell these products must be aware of such resolution and must receive enough information and advertisements capable of guiding end users on their responsibility of returning used batteries to the manufacturer through the establishments that sell them and/or render technical service assistance.



DEAR CUSTOMER

All customers/end users are obliged to return their used battery to a point of sale. Do not throw batteries away.

Points of sale are obliged to accept your used battery. Store it in a proper place and return it to the manufacturer for recycling.

Risk of exposure to lead and acid solution.

The acid and lead in batteries can contaminate the soil, the subsoil, and the water if released into the environment.

The consumption of contaminated water may cause arterial hypertension, anemia, sadness, weakness, leg pain and drowsiness.

Acid solution in contact with the eyes can cause chemical conjunctivitis, and with the skin it can cause contact dermatitis.

In case of accidental contact with the skin or eyes, wash the spot immediately with running water and call a physician for medical assistance.

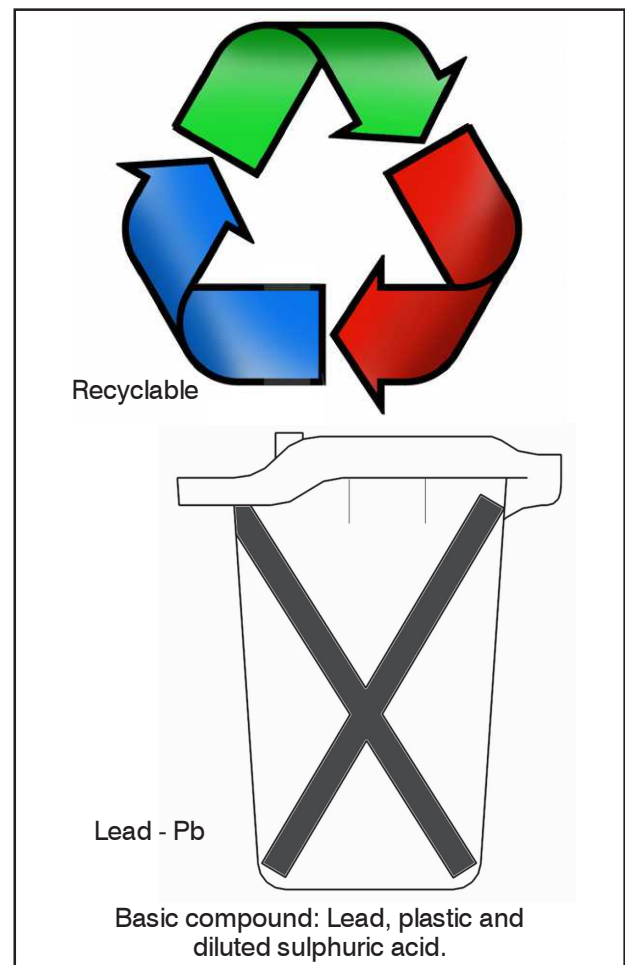


Fig. 1

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Technical Specifications

01

1 - Engine

1.1 - General features	2650	2660	2670	2680
Brand	PERKINS			
Model	1104D-44T TIER III			
Maximum power - ISO14396				
hp (kW)@2200 rpm	75 (55.5)	80 (60.5)	90 (68.0)	100 (72.5)
Maximum torque - ISO14396				
mkgf (Nm)@1400 rpm	31.3 (307.0)	35.9 (352.0)	39.7 (390.0)	39.7 (390.0)
PTO power - DIN 70020				
hp (kW)@2200 rpm (+/-5%)	62 (46,2)	70 (52,2)	77 (57,4)	83 (61,9)
PTO torque - DIN 70020				
mkgf (Nm)@1400 rpm (+/-5%)	29,7(292)	33,4(328)	37,2(365)	37,2(365)
Type of injection	Direct injection			
Aspiration	Turbocharged			
Cylinder bore	105mm			
Piston stroke	127 mm			
Cylinders	4.4L / 269 in ³			
Injection order	1-3-4-2			
Compression ratio	18,2:1			
Engine - Dry weight	306 kg			

1.2 - Lubrication system

Type	Type with geared pump. Oil filter with integral flow.
Heat exchanger	Incorporated with filter head on the left-hand side
Relief Valve	Incorporated to the engine block on the left-hand side
Number of filters	1
Minimum oil pressure	28 kPa (41 psi) (at the maximum engine speed)

1.3 - Cooling system

Radiator	Vertical tubes and horizontal fins. The system has an expansion reservoir for the coolant.
Coolant	Running water + ethylene glycol
Expansion vessel cap	0.69 bar (10 psi)
Water pump	Centrifugal, driven by a poly-V belt, self-tensioned.
Thermostatic valve - qty	01
Temperature range:	82 to 87° C (180 to 189° F)

1.4 - Air filter system

Type	Type, with 2 elements (primary and secondary). Fitted with: electrical restriction indicator with warning light on the panel, and automatic ejection system for dust accumulated in the filter.
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Technical Specifications

1.5 - Fuel supply system

	2650	2660	2670	2680
Water separator	It separates the largest impurity particles (up to 30 microns) and the water contained in the fuel.			
Fuel injection pump	Delphi, rotary - DP310			
Fuel cut-off	Through the solenoid assembled behind the injection pump that acts upon its governor.			
Starting aid	Individual glow plugs (one for each cylinder).			
Fuel lift pump	Electric, located in fuel filter head.			
Fuel filter	Ecoplus/paper element.			

2 - Electrical system - powers and capacities

Neutral start switch	Allows the engine to start only when the clutch pedal is fully depressed.			
Battery:	12 V / 100 A/h			
Alternator - Cab version:	Iskra - 12 V / 120 A/h			
Alternator - Footstep version:	Iskra - 12 V / 55 A/h			
Starter motor	Iskra - 12 V / 3.0 kw			
Front headlight (high beam)	35 watts			
Front headlight (Low beam)	35 watts			
Rear work light and front cab roof light	55 W			
Flashing lights (hazard and turn indicator)	21 W			
Rear red lights	5 W			
Position lights	5 W			
Dome light (in the cab)	5 W			
Taillights (in the cab)	5 W			

3 - Clutches

Clutch collar - type	It has a play of 40 to 50 mm in the pedal.			
Dual	When equipped with live type PTO.			
Split torque	When equipped with IPTO.			
Clutch disc diameter	305 mm (12 in)	305 mm (12 in)	330 mm (13 in)	330 mm (13 in)

4 - Transmission gearbox

4.1 - 8x2 speeds gearbox 2650 2660 2670 2680

Characteristics The 8 x 2 gearbox has 8 forward and 2 reverse speeds. This is achieved by using a four forward and one reverse speed gearbox, compounded by a planetary unit.

Control By two levers.

4.2 - 8x8 Syncro Shuttle gearbox

Characteristics The 8 forward and 8 reverse speeds are achieved by using a four speeds gearbox, a planetary unit and a reverse unit. The coupling of all gears is synchronized type.

Control By two levers and a third lever for reverse unit, located on Left Hand side of instrument panel.

4.3 - 12x4 speeds Syncro gearbox

Characteristics The 12 forward and 4 reverse speeds are achieved by using a two-stage gearbox and a planetary unit. The coupling of 2nd and 3th gears is synchronized type.

Control By three levers on footstep version tractors and two levers on cab version tractors.

4.4 - Creeper

Application Optional for footstep type tractors, with 8x2 and 8x8 speeds transmission.

Characteristics Provides extra-low speed range.

5 - Maximum theoretical speeds on roads

Model	2650	2660	2670	2680
Tires/engine rpm Transmission	18.4-30R1/2200 12x4 speeds syncro	18.4-30R1/2200 12x4 speeds syncro	18.4-30R1/2200 12x4 speeds syncro	18.4-30R1/2200 12x4 speeds syncro
	mph	mph	mph	mph
1	1.6	1.6	1.6	1.6
2	2.0	2.0	2.0	2.0
3	2.4	2.4	2.4	2.4
4	2.9	2.9	2.9	2.9
5	4.5	4.5	4.5	4.5
6	5.5	5.5	5.5	5.5
7	6.5	6.5	6.5	6.5
8	8.2	8.2	8.2	8.2
9	9.7	9.7	9.7	9.7
10	12.0	12.0	12.0	12.0
11	18.2	18.2	18.2	18.2
12	22.5	22.5	22.5	22.5



NOTE:

Tractor speed depends upon the gearbox and wheels used. To know the travel speed of your tractor, on each gear, within an engine speed range between 1400 and 2200 rpm, check the travel speed chart decal attached to the right-hand side of the operation station. Measuring is performed according to the rear tires and transmission intaled.

Technical Specifications

6 - Rear Axle

2650**2660****2670****2680**

Type	Normal duty - sealed Heavy duty - sealed. Bevel drive with planetary reduction units - and mechanical differential lock.			
Rear axle planetary reduction	3.143:1	3.143:1	4.80:1	4.80:1
Crown wheel and pinion ratio (2WD)	3.4545:1			
Crown wheel and pinion ratio (4WD)	3.888:1			
Max. permissible load capacity - kg (pounds)	4.536 (10.000)	4.536 (10.000)	4.840 (10.670)	4.840 (10.670)
Differential lock	By means of coupling sleeves: One is attached to the differential carrier and the other slides over the splines of the right-hand axle drive shaft. The sliding sleeves are driven by a fork, which, in turn, is mechanically controlled through a pedal.			

7 - Front axle

7.1 - Front Axle - 2 WD

Type	Three section with telescopic outer arms and three-bolt fixing			
Adjustment	100 mm (4 in) increments.			
Wheel camber	3° 30'			
Wheel caster - Standard axle	4° 56'			
Axle beam nut torque	205 Nm (150 lbf.ft)			
Track rod torques - pegbolt	45 Nm (35 lbf.ft)			
Track rod torques - Clamp nuts and bolts	45 Nm (35 lbf.ft)			
Max. vertical static load - kg (pounds)	2385 (5258)	2385 (5258)	2730 (6019)	2730 (6019)

7.2 - Front Axle - 4 WD

Brand	Carraro			
Type	20.14 Side Drive	20.14 Side Drive	20.18 Center Drive	20.18 Center Drive
Bevel gear ratio	2.153:1	2.153:1	2.90:1	2.90:1
Final reduction ratio	6.00:1			
Maximum permissible load capacity - limited				
by tires pressure - kg (pounds)	2447 (5395)	2447 (5395)	2400 (5291)	2400 (5291)
Maximum turning angle	50° (with screw type adjustable stops)			

8 - Brakes

Service	Oil immersed discs with independent action in the rear wheels by hydraulic power.			
Drive	Hydraulic			
Number of active discs on each side	04			
Active disc material	Steel with syntherized bronze			
Parking brake	Operated with brake pedal locking by dash pull-out knob.			



IMPORTANT: With 4WD front axle instaled: For the parking brake to work efficiently, the four-wheel drive should be on. Therefore, brakes act on the tractor four wheels.

9 - Hydraulic Lift System 2650 2660 2670 2680**01**

Category	II			
Linkage type	Fixed ball ends or telescopic ball ends.			
Maximum lift capacity at the lower links with				
links horizontal (Footstep version)	2100 kg (4636 lb)	2100 kg (4636 lb)	2500 kg (5510 lb)	2500 kg (5510 lb)
Maximum lift capacity at the lower links with				
links horizontal (Cab version)	2500 kg (5510 lb)	2500 kg (5510 lb)	2500 kg (5510 lb)	2500 kg (5510 lb)
Pump type	Four-cylinder scotch yoke pump, driven from the forward end of the PTO shaft supplying oil under pressure to the linkage cylinder.			
Maximum pump pressure	210 bar (2986 psi)			
Maximum out put - Linkage pump	17 liter/min (4.49 gal/min)	27 liter/min (7.1 gal/min)		
Filtration	150 micron washable strainer			

9.1 - Auxiliary Hydraulic System

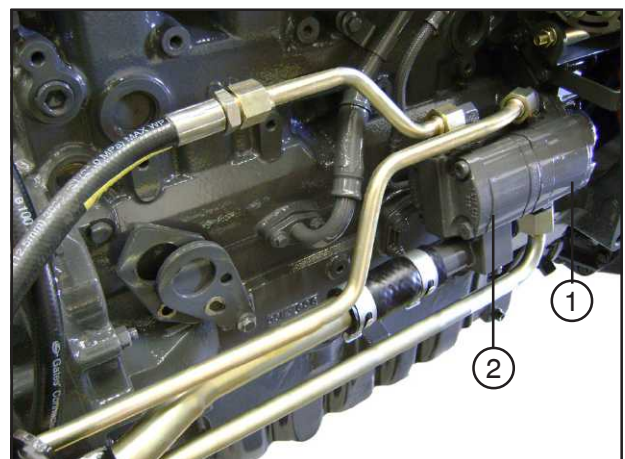
Pump type	Gear type, located on right-hand side of engine.		
Pressure	190 bar (2755,7 psi)		
Oil flow	37.9 liters/min (10.17 US gal/min)		
Oil flow with combined flow activated (if fitted)	55.5 liters/min (14.66 US gal/min)	67.8 liters/min (17.3 gal/min)	
Control valve	Double or triple section, mounted on the rear of tractor, permits to operate Single-acting and Double-acting type cylinders.		

10 - Hydrostatic steering wheel

Operation	The rear gear pump (1) is responsible for the steering wheel drive. After this, the oil is sent to the independent hydraulic control valve.		
Maximum pressure	Between 110 and 130 bar (1595 and 1885 PSI).		
Maximum flow (2WD)	9,6 liter/min (3.53 gpm)		
Maximum flow (4WD)	4,8 liter/min (1.26 gpm)		
Hydrostatic unit	Sauer Danfoss, with closed center and a Load Sensing type, priority valve coupled.		
Oil filtering	Filtered by the oil filter in the transmission and hydraulic system. The hydraulic system and the steering use the same oil.		

10.1 - Identifying hydraulic pumps:

- 1 - Front pump: (38,5 liters/min@2200 rpm)(8,5 gpm@2200 rpm) Actuates the auxiliary functions such as the IPTO and the four-wheel drive.
- 2 - Rear pump: (30,8 liters/min@2200 rpm)(6,8 gpm@2200 rpm) Actuates the steering wheel and then the hydraulic control valve.
Flow is prioritized to the steering through the priority valve.

**Fig. 1**

Technical Specifications

11 - Independent hydraulic control valve

	2650	2660	2670	2680
Type	Independent and closed center			
Control valve	Double or triple section, mounted on the rear of tractor, permits to operate Singleacting and Double-acting type cylinders.			
Max. flow rate, no combined flow - liters/min (gpm)	37,9 (8,3)	37,9 (8,3)	37,9 (8,3)	37,9 (8,3)
Max. flow rate, with combined flow activated ...	55,5 liters/min (12,2 gpm) for tractors with PTO of 540 rev/min and 67,8 liters/min (14,9 gpm) for tractors with PTO of 540 and 1000 rev/min The combined flow, when active, transfers the hydraulic lift pump flow (17 or 27 l/min)(3,7 or 5,9 gpm) to the auxiliary Control valve, increasing flow rate. When activating the combined flow, the lift system Is inoperative.			
Relief valve				
Maximum pressure - bar (PSI)	170 (2466)	170 (2466)	170 (2466)	170 (2466)
Maximum flow - liters/min (gpm)	30 (6,6)	30 (6,6)	30 (6,6)	30 (6,6)
Types and number of valves available: 2 valves				
Type 1	2 valves with spring return type.			
Type 2	2 valves with "kick-out".			
Type 3	1 valve with spring return and 1 valve with "kick-out".			
Types and number of valves available: 3 valves				
Type 1	3 valves with "kick-out".			
Type 2	2 valves with "kick-out" + 1 spring return type.			
Type 3	2 valves with "kick-out" + 1 with motor kit.			

12 - Independent power take-off

Type:

Dependent - PTO	Standard	Standard	No	No
Independent - IPTO (Engaged by a hydraulic multidisc clutch)				
	Optional	Optional	Standard	Standard
Control	By a lever on the left of the seat.			
PTO Speed	540 rpm and 1000 rpm.			
Shaft Diameter	35 mm (1 3/8 in).			
Qty. of splines	6 (for 540 rpm shaft) and 21 (for 1000 rpm shaft).			

13 - Tractor weight

Shipping weight - Cab version - kg (pounds) ..	2980 (6570)	2980 (6570)	3620 (7980)	3620 (7980)
With ballasting - Cab version - kg (pounds)	4001 (8821)	4001 (8821)	6245 (13768)	6245 (13768)
Shipping weight - Footstep version - kg (pounds) ..	2227 (4910)	2227 (4910)	2420 (5335)	2420 (5335)
With ballasting - Footstep version - kg (pounds) ..	2920 (6437)	2920 (6437)	2963 (6532)	2963 (6532)

14 - Filling capacities**2650****2660****2670****2680**

Engine sump oil-including filter - liter (US gal)	9,0 (2.36)	9,0 (2.36)	9,0 (2.36)	9,0 (2.36)
Cooling system - liter (US gal)	14,6 (3.86)	14,6 (3.86)	14,6 (3.86)	14,6 (3.86)
Fuel tank				
Footstep version - liter (US gal)	100 (26,5)	100 (26,5)	100 (26,5)	100 (26,5)
Cab version - liter (US gal)	100 (26,5)	100 (26,5)	100 (26,5)	100 (26,5)
Transmission/hydraulic oil - liter (US gal)	42,0 (11.1)	42,0 (11.1)	45,0 (11.9)	45,0 (11.9)
Rear planetary reducers - each - liter (US pt)	2,0 (3,6)	2,0 (3,6)	3,0 (5.4)	3,0 (5.4)
Four-wheel drive front axle differential	4.5 (1.2)	4.5 (1.2)	5.5 (1.45)	5.5 (1.45)
Four-wheel drive front axle planetary - each side - liter (US pt)	0.7 (1.47)	0.7 (1.47)	1.0 (2.01)	1.0 (2.01)

**NOTE:**

The transmission capacity varies according to the tractor configurations. Make sure the oil level is correct.

Apart from this, add oil when operating with hydraulic control valve implements, making sure the oil level is not too low when all cylinders are extended.

15 - Drawbar

Max static load - all positions - kg (pounds)	1179 (2599)	
Distance to PTO shaft - retracted position - mm (in)	254 (10)	356 (14)
Distance to PTO shaft - extended position - mm (in)	356 (14)	406 (16)
Drawbar face to center of PTO shaft - Minimum - mm (in)	65 (4.3)	108 (4.25)
Drawbar face to center of PTO shaft - Maximum - mm (in)	265 (10.1)	257 (10.13)
Drawbar side swing from center - mm (in)	228 (9.12)	

16 - Cab and air conditioning

Features Supported on rubber pads to absorb vibrations, it incorporates acoustic and heat insulation, access through both doors, all-round visibility, and excellent ergonomic layout.

Compressor Belt driven.

Refrigerant gas R-134a - 1,7 kg (3,7 pounds)

Condenser Located in front of the water radiator.

Air filter Paper element located on the cab roof.

17 - Wheel Bolt or Nut Torque

Front: Torque for single tires

Rear: Torque for single and dual tires

Front - two-wheel drive axle:

Disc to axle hub 150 N.m (110 ft.lbs)

Rim to disc 150 N.m (110 ft.lbs)

Front - four-wheel drive axle:

Disc to axle hub 265 N.m (195 ft.lbs)

Rim to disc 150 N.m (110 ft.lbs)

Rear - pressed wheels:

Disc to axle hub 265 N.m (195 ft.lbs)

Rim to disc 150 N.m (110 ft.lbs)

Rear - PAVT wheels:

Disc to Axle Hub 325 N.m (240 ft.lbs)

Clamp nuts 260 N.m (190 ft.lbs)

Technical Specifications

18 - General tractor dimensions

2650 and 2660 - Dimensions and Weights - Footstep Standard version

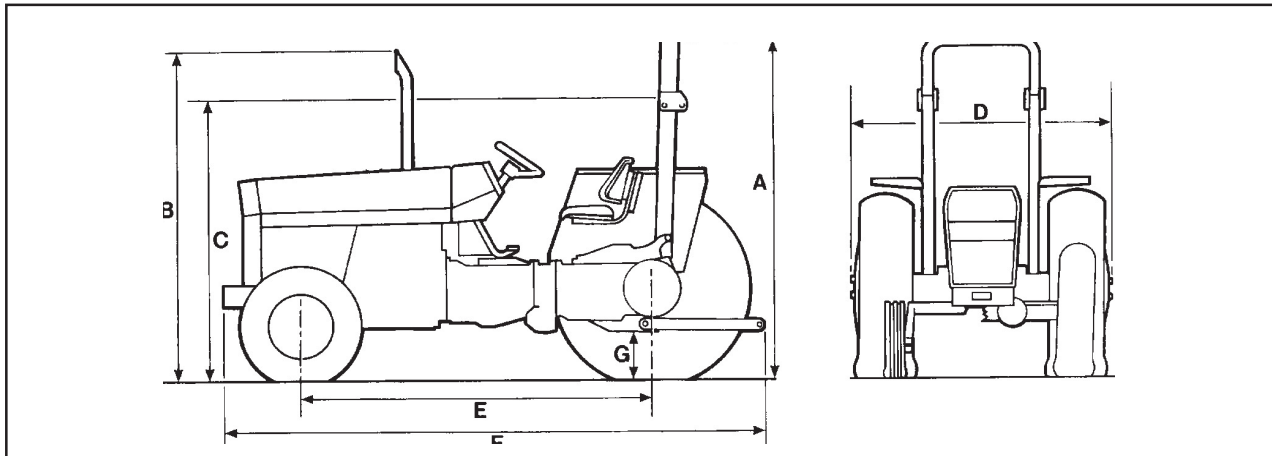
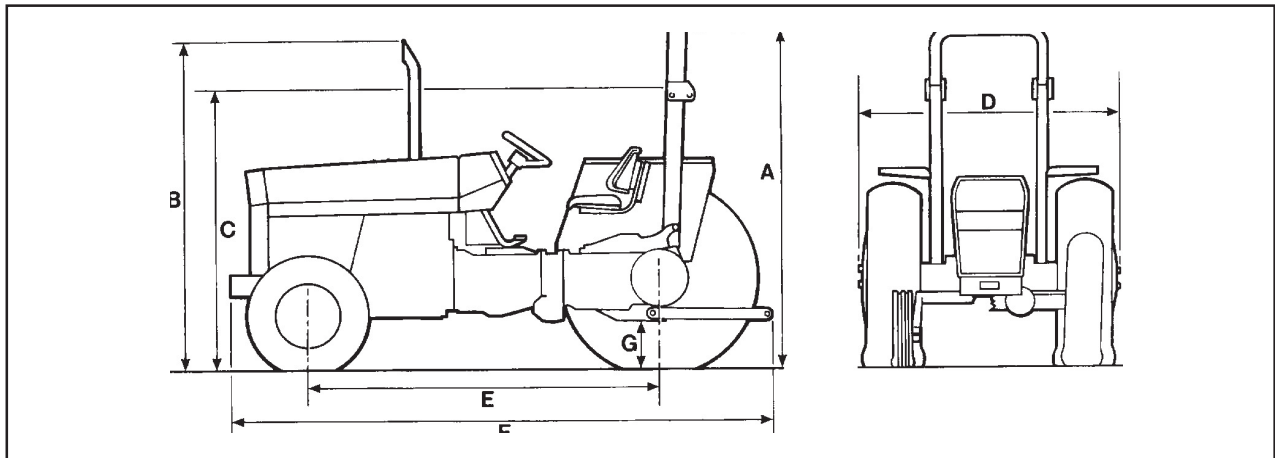


Fig. 1

	2650 / 2 WD	2650 / 4 WD	2660 / 2 WD	2660 / 4 WD
A Height over ROPS Without canopy	2575 mm (101.4 in)	-	2610 mm (102.8 in)	2610 mm (102.8 in)
B Height over exhaust pipe	2450 mm (96.5 in)	-	2460 mm (96.9 in)	2465 mm (97.0 in)
C Height over folded down ROPS	1982 mm (78.0 in)	-	2017 mm (79.4 in)	2017 mm (79.4 in)
D Minimum width	2005 mm (78.9 in)	-	2030 mm (80.0 in)	2030 mm (80.0 in)
E Wheelbase	2285 mm (90 in)	-	2285 mm (90 in)	2370 mm (93 in)
F Length (link end to frame)	3935 mm (155.0 in)	-	3935 mm (155.0 in)	3945 mm (155.3 in)
G Ground clearance under drawbar	374 mm (14.7 in)	-	415 mm (16.3 in)	415 mm (16.3 in)
Weights:				
- Shipping weight	2530 kg (5578 lb)	-	2608 kg (5737 lb)	2880 kg (6336 lb)
Standard wheels:				
- Front wheels	7.50 x 16 F2	11.2 x 24 R1	7.50 x 16 F2	12.4 x 24 R1
- Rear tires	16.9 x 30 R1	16.9 x 30 R1	16.9 x 30 R1	18.4 x 30 R1
Turning circles (with Standard wheels - to Left Hand side) - mm (in):				
	2650	2660		
- 2 WD				
Without using brakes	4105 mm (161.6 in)		4105 mm (161.6 in)	
With using brakes	3762 mm (148.1 in)		3762 mm (148.1 in)	
- 4 WD front axle activated:				
Without using brakes	4680 mm (184.3)		4680 mm (184.3)	
With using brakes	3460 mm (136.2)		3460 mm (136.2)	
- 4 WD front axle disactivated:				
Without using brakes	4160 mm (163.8)		4160 mm (163.8)	
With using brakes	3800 mm (149.6)		3800 mm (149.6)	

2670 and 2680 Dimensions and Weights - Footstep Standard version**01****Fig. 2**

	2670 / 2 WD	2670 / 4 WD	2680 / 2 WD	2680 / 4 WD
A Height over ROPS Without canopy	2620 mm (103.1 in)	2620 mm (103.1 in)	2620 mm (103.1 in)	2620 mm (103.1 in)
B Height over exhaust pipe	2455 mm (96.7 in)	2465 mm (97.1 in)	2455 mm (96.7 in)	2465 mm (97.1 in)
C Height over folded down ROPS	2017 mm (79.4 in)	2017 mm (79.4 in)	2017 mm (79.4 in)	2017 mm (79.4 in)
D Minimum width (rear wheels)	2130 mm (83.8 in)	2130 mm (83.8 in)	2130 mm (83.8 in)	2130 mm (83.8 in)
E Wheelbase	2300 mm (90.55 in)	2360 mm (92.9 in)	2300 mm (90.55 in)	2360 mm (92.9 in)
F Length (link end to frame)	3930 mm (154.7 in)	3945 mm (155.3 in)	3930 mm (154.7 in)	3945 mm (155.3 in)
G Ground clearance under drawbar	415 mm (16.3 in)	415 mm (16.3 in)	415 mm (16.3 in)	415 mm (16.3 in)
Weights:				
- Shipping weight	3090 kg (6798 lb)	3300 kg (7260 lb)	3090 kg (6798 lb)	3300 kg (7260 lb)
Standard wheels:				
- Front wheels	9.5L-15F2	12.4x24R1	9.5L-15F2	12.4x24R1
- Rear tires	18.4x30R1	18.4x30R1	18.4x30R1	18.4x30R1
Turning circles (with Standard wheels -				
to Left Hand side) - mm (in):				
	2670		2680	
- 2 WD				
Without using brakes	4290 mm (168.9 in)		4290 mm (168.9 in)	
With using brakes	3880 mm (152.8 in)		3880 mm (152.8 in)	
- 4 WD front axle disactivated:				
Without using brakes	4400 mm (173.2 in)		4400 mm (173.2 in)	
With using brakes	3970 mm (156.3 in)		3970 mm (156.3 in)	

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- 02A01** **Separating the front axle from the engine**
- 02B01** **Separating the engine from the transmission (gearbox)**
- 02C01** **Separating the transmission from the rear axle (center housing)**
- 02D01** **Sheet Metal and Canopy**
- 02E01** **Separation in tractors with cabins**

02

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