

TWOSE

FT-Premium Series Shredder/Mowers
Models: FT250M / FT270M / FT300M

Operator & Parts Manual

July 2015

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Part No. 23671.10

IMPORTANT VERIFICATION OF WARRANTY REGISTRATION



DEALER WARRANTY INFORMATION & REGISTRATION VERIFICATION

It is imperative that the selling dealer registers this machine with Twose of Tiverton Limited before delivery to the end user – failure to do so may affect the validity of the machine warranty.

To register machines go to the Twose web site at www.twose.com, log onto 'Dealer Inside' and select the 'Machine Registration button' which can be found in the Service Section of the site. Confirm to the customer that the machine has been registered in the section below.

Should you experience any problems registering a machine in this manner please contact the Twose Office on 01884 253691.

Registration Verification

Dealer Name:
Dealer Address:
Customer Name:
Date of Warranty Registration:/...../..... Dealer Signature:

NOTE TO CUSTOMER / OWNER

Please ensure that the above section above has been completed and signed by the selling dealer to verify that your machine has been registered with Twose of Tiverton Limited.

IMPORTANT: During the initial 'bedding in' period of a new machine it is the customer's responsibility to regularly inspect all nuts, bolts and hose connections for tightness and re-tighten if required. New hydraulic connections occasionally weep small amounts of oil as the seals and joints settle in – where this occurs it can be cured by re-tightening the connection – *refer to torque settings chart below*. The tasks stated above should be performed on an hourly basis during the first day of work and at least daily thereafter as part of the machines general maintenance procedure.

TORQUE SETTINGS FOR HYDRAULIC FITTINGS

HYDRAULIC HOSE ENDS		
BSP	Setting	Metric
1/4"	18 Nm	19 mm
3/8"	31 Nm	22 mm
1/2"	49 Nm	27 mm
5/8"	60 Nm	30 mm
3/4"	80 Nm	32 mm
1"	125 Nm	41 mm
1.1/4"	190 Nm	50 mm
1.1/2"	250 Nm	55 mm
2"	420 Nm	70 mm

PORT ADAPTORS WITH BONDED SEALS		
BSP	Setting	Metric
1/4"	34 Nm	19 mm
3/8"	47 Nm	22 mm
1/2"	102 Nm	27 mm
5/8"	122 Nm	30 mm
3/4"	149 Nm	32 mm
1"	203 Nm	41 mm
1.1/4"	305 Nm	50 mm
1.1/2"	305 Nm	55 mm
2"	400 Nm	70 mm

WARRANTY POLICY

WARRANTY REGISTRATION

All machines must be registered, by the selling dealer with Twose of Tiverton Ltd, before delivery to the end user. On receipt of the goods it is the buyer's responsibility to check that the Verification of Warranty Registration in the Operator's Manual has been completed by the selling dealer.

1. LIMITED WARRANTIES

- 1.01. *All machines supplied by Twose of Tiverton Ltd are warranted to be free from defects in material and workmanship from the date of sale to the original purchaser for a period of 12 months, unless a different period is specified.*
- 1.02. *All spare parts supplied by Twose of Tiverton Ltd and purchased by the end user are warranted to be free from defects in material and workmanship from the date of sale to the original purchaser for a period of 6 months. All parts warranty claims must be supported by a copy of the failed part invoice to the end user. We cannot consider claims for which sales invoices are not available.*
- 1.03. *The warranty offered by Twose of Tiverton Ltd is limited to the making good by repair or replacement for the purchaser any part or parts found, upon examination at its factory, to be defective under normal use and service due to defects in material or workmanship. Returned parts must be complete and unexamined. Pack the component(s) carefully so that any transit damage is avoided. All ports on hydraulic items should be drained of oil and securely plugged to prevent seepage and foreign body ingress. Certain other components, electrical items for example, may require particular care when packing to avoid damage in transit.*
- 1.04. *This warranty does not extend to any product from which Twose of Tiverton Ltd's serial number plate has been removed or altered.*
- 1.05. *This warranty does not apply to any part of the goods, which has been subjected to improper or abnormal use, negligence, alteration, modification, fitment of non-genuine parts, accident damage, or damage resulting from contact with overhead power lines, damage caused by foreign objects (e.g. stones, iron, material other than vegetation), failure due to lack of maintenance, use of incorrect oil or lubricants, contamination of the oil, or which has served its normal life. This warranty does not apply to any expendable items such as blades, belts, clutch linings, filter elements, flails, flap kits, skids, soil engaging parts, shields, guards, wear pads, pneumatic tyres or tracks.*
- 1.06. *Temporary repairs and consequential loss - i.e. oil, downtime and associated parts are specifically excluded from the warranty.*
- 1.07. *Warranty on hoses is limited to 12 months and does not include hoses which have suffered external damage. Only complete hoses may be returned under warranty, any which have been cut or repaired will be rejected.*
- 1.08. *Machines must be repaired immediately a problem arises. Continued use of the machine after a problem has occurred can result in further component failures, for which Twose of Tiverton Ltd cannot be held liable, and may have safety implications.*
- 1.09. *If in exceptional circumstances a non Twose of Tiverton Ltd part is used to effect a repair, warranty reimbursement will be at no more than Twose of Tiverton Ltd's standard dealer cost for the genuine part.*
- 1.10. *Except as provided herein, no employee, agent, dealer or other person is authorised to give any warranties of any nature on behalf of Twose of Tiverton Ltd.*
- 1.11. *For machine warranty periods in excess of 12 months the following additional exclusions shall apply:*
 - 1.11.1. *Hoses, exposed pipes and hydraulic tank breathers.*
 - 1.11.2. *Filters.*
 - 1.11.3. *Rubber mountings.*
 - 1.11.4. *External electric wiring.*
 - 1.11.5. *Bearings and seals.*

- 1.12. All service work, particularly filter changes, must be carried out in accordance with the manufacturer's service schedule. Failure to comply will invalidate the warranty. In the event of a claim, proof of the service work being carried out may be required.
- 1.13. Repeat or additional repairs resulting from incorrect diagnosis or poor quality previous repair work are excluded from warranty.

NB Warranty cover will be invalid if any non-genuine parts have been fitted or used. Use of non-genuine parts may seriously affect the machine's performance and safety. Twose of Tiverton Ltd cannot be held responsible for any failures or safety implications that arise due to the use of non-genuine parts.

2. REMEDIES AND PROCEDURES

- 2.01. The warranty is not effective unless the Selling Dealer registers the machine, via the Twose of Tiverton Ltd web site and confirms the registration to the purchaser by completing the confirmation form in the operator's manual.
- 2.02. Any fault must be reported to an authorised Twose of Tiverton Ltd dealer as soon as it occurs. Continued use of a machine, after a fault has occurred, can result in further component failure for which Twose of Tiverton Ltd cannot be held liable.
- 2.03. Repairs should be undertaken within two days of the failure. Claims submitted for repairs undertaken more than 2 weeks after a failure has occurred, or 2 days after the parts were supplied will be rejected, unless the delay has been authorised by Twose of Tiverton Ltd. Please note that failure by the customer to release the machine for repair will not be accepted as a reason for delay in repair or submitting warranty claims.
- 2.04. All claims must be submitted, by an authorised Twose of Tiverton Ltd Service Dealer, within 30 days of the date of repair.
- 2.05. Following examination of the claim and parts, Twose of Tiverton Ltd will pay, at their discretion, for any valid claim the invoiced cost of any parts supplied by Twose of Tiverton Ltd and appropriate labour and mileage allowances if applicable.
- 2.06. The submission of a claim is not a guarantee of payment.
- 2.07. Any decision reached by Twose of Tiverton Ltd is final.

3. LIMITATION OF LIABILITY

- 3.01. Twose of Tiverton Ltd disclaims any express (except as set forth herein) and implied warranties with respect to the goods including, but not limited to, merchantability and fitness for a particular purpose.
- 3.02. Twose of Tiverton Ltd makes no warranty as to the design, capability, capacity or suitability for use of the goods.
- 3.03. Except as provided herein, Twose of Tiverton Ltd shall have no liability or responsibility to the purchaser or any other person or entity with respect to any liability, loss, or damage caused or alleged to be caused directly or indirectly by the goods including, but not limited to, any indirect, special, consequential, or incidental damages resulting from the use or operation of the goods or any breach of this warranty. Notwithstanding the above limitations and warranties, the manufacturer's liability hereunder for damages incurred by the purchaser or others shall not exceed the price of the goods.
- 3.04. No action arising out of any claimed breach of this warranty or transactions under this warranty may be brought more than one (1) year after the cause of the action has occurred.

4. MISCELLANEOUS

- 4.01. Twose of Tiverton Ltd may waive compliance with any of the terms of this limited warranty, but no waiver of any terms shall be deemed to be a waiver of any other term.
- 4.02. If any provision of this limited warranty shall violate any applicable law and is held to be unenforceable, then the invalidity of such provision shall not invalidate any other provisions herein.
- 4.03. Applicable law may provide rights and benefits to the purchaser in addition to those provided herein.



DECLARATION OF CONFORMITY

Conforming to EU Machinery Directive 2006/42/EC

We,

TWOSE of TIVERTON LIMITED,
6 Chinon Court, Lower Moor Way,
Tiverton Business Park, Tiverton, Devon, EX16 6SS, UK

Hereby declare that:

The Product; *Tractor Mounted Flail Mower / Shredder*

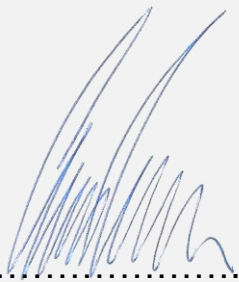
Product Code; *MA25, MA27, MA30*

Serial No. & Date Type

Manufactured in; *Slovenija*

Complies with the required provisions of the Machinery Directive 2006/42/EC
The machinery directive is supported by the following harmonized standards;

- BS EN ISO 12100 (2010) Safety of machinery – General principles for design – Risk assessment and risk reduction.
- BS EN 349 (1993) + A1 (2008) Safety of machinery - Minimum distances to avoid the entrapment with human body parts.
- BS EN 953 (1997) + A1 (2009) Safety of machinery - Guards general requirements for the design and construction of fixed and movable guards.
- BS EN 4413 (2010) Hydraulic fluid power. Safety requirements for systems and their components.

Signed  *Responsible Person*
CHRISTIAN DAVIES on behalf of TWOSE OF TIVERTON LIMITED

Status: *General Manager*

Date: *September 2015*

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GENERAL INFORMATION

Always read this manual before fitting or operating the machine – whenever any doubt exists contact your local dealer or the Twose Service Department for advice and assistance.

Use only Twose Genuine Service Parts on Twose Equipment and Machines

DEFINITIONS – The following definitions apply throughout this manual:

WARNING

An operating procedure, technique etc., which –
can result in personal injury or loss of life if not observed carefully.

CAUTION

An operating procedure, technique etc., which –
can result in damage to either machine or equipment if not observed carefully.

NOTE

An operating procedure, technique etc., which –
is considered essential to emphasis.

LEFT AND RIGHT HAND

This term is applicable to the machine when attached to the tractor and is viewed
from the rear – this also applies to tractor references.

MACHINE & DEALER INFORMATION

Record the Serial Number of your machine on this page and always quote this number when ordering parts. Whenever information concerning the machine is requested remember also to state the make and model of tractor to which the machine is fitted.

Machine Serial Number:	Installation Date:
Machine Model details:	
Dealer Name:	
Dealer Address:	
Dealer Telephone No:	
Dealer Email Address:	

MACHINE DESCRIPTION & PURPOSE OF USE

FT-Premium Series Mowers are '3-point linkage' tractor mounted heavy duty professional flail mowers/shredders designed primarily for the mulching of grasses, brambles, bushes, branches, and general crop residues. Their tough construction, working widths of 2.5, 2.7 or 3.0m, automatic belt tensioning system, and offset working capability of up to 0.53m makes them ideal for heavy duty maintenance work in large agricultural and green areas by farmers and contractors alike.

These machines should only be used to perform tasks for which they were designed – use of the machine for any other function or purpose may be dangerous to persons and damaging to components and is therefore not advisable.

MACHINE IDENTIFICATION

Each machine is fitted with an identification plate with the following information:

1. Machine (Part Number)
2. Machine Serial No.
3. Machine Weight

When ordering spares or replacement parts from your local dealer it is important to quote both Part Number and Serial Number as stated on the identification plate so the machine and model can be quickly and correctly identified.

TECHNICAL SPECIFICATIONS

Technical Data

SPECIFICATION	FT250M	FT270M	FT300M
Working Width	2450mm	2700mm	3000mm
Tractor Power Requirement	65-80 HP	80-120 HP	95-135 HP
PTO RPM	1000 RPM	1000 RPM	1000 RPM
Hammer Blades (No.)	20	24	28
Machine Weight	1017kg	1265kg	1390kg
Offset Capability	530mm	530mm	530mm
Linkage Type	3-Point (Cat. II)	3-Point (Cat. II)	3-Point (Cat. II)
Machine Width	2730mm	2980mm	3270mm

Optional Equipment

The standard flails fitted to the machine are the hammer blade type; Y-blade flails are available as an option. The cutting capability of the each particular type of flail will be dependent on the type and hardness of the material being cut, but in general the following cutting thicknesses apply:

Y-blade flails – for materials up to a maximum of 30mm diameter.

Hammer flails – for materials up to a maximum of 80mm diameter.

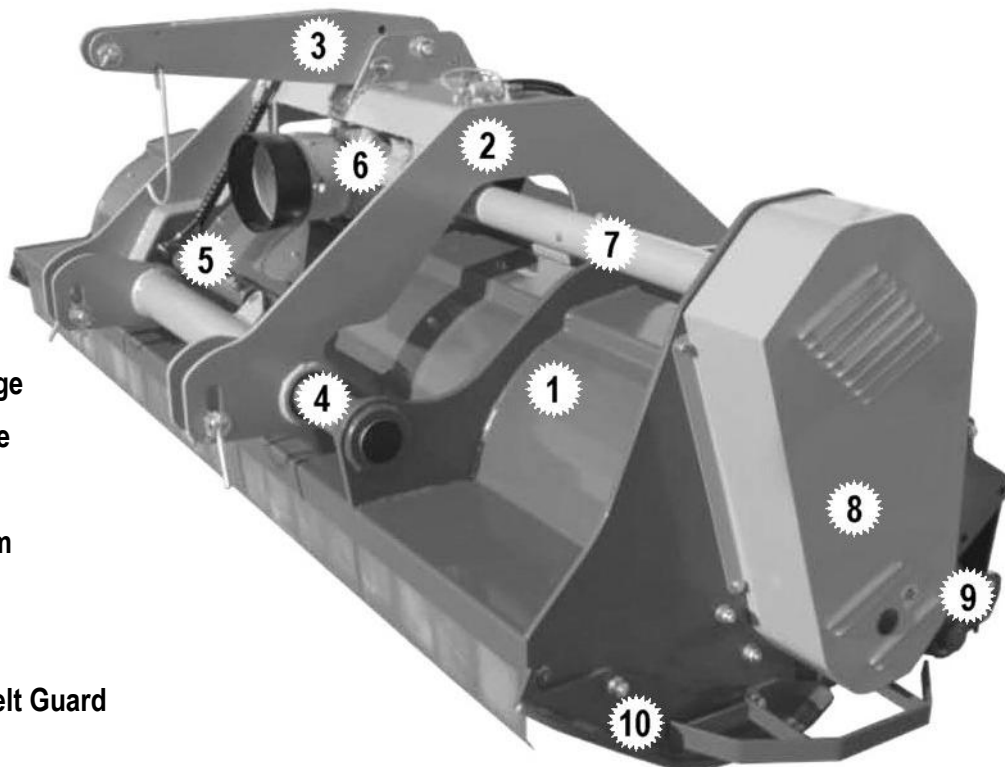
Noise Level

The sound level of this machine, as measured at the operator's ear, is within the range of 70 to 90 dB when the rear window of the tractor is open. We recommend that ear protectors are worn and the tractor windows kept closed at all times when operating this machine.

COMPONENT IDENTIFICATION

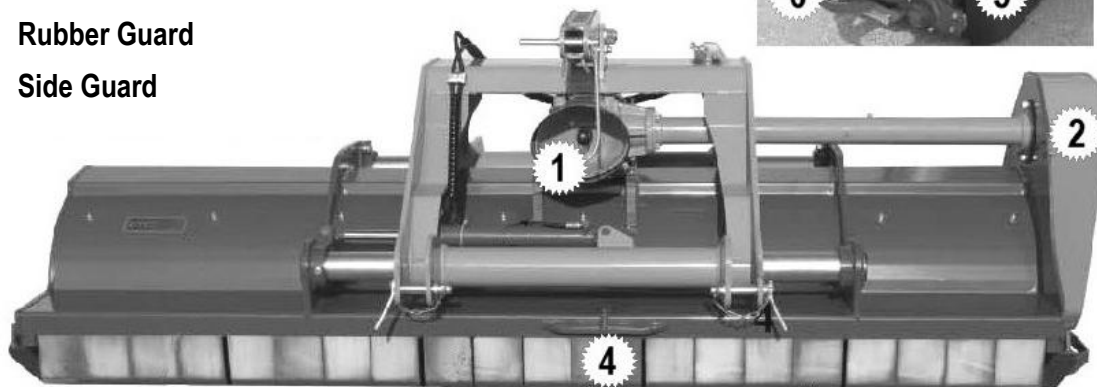
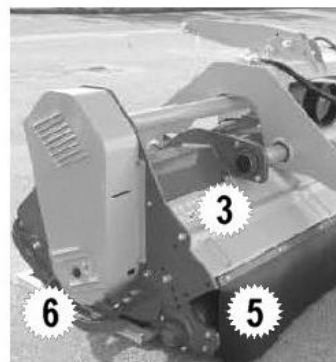
Main Components

1. Main Frame
2. 3-Point Linkage
3. Upper Linkage
4. Sliding Tubes
5. Hydraulic Ram
6. Gearbox
7. Half Shaft
8. Belt Drive / Belt Guard
9. Rear Roller



Safety Features

1. PTO Shaft Guard
2. Belt Guard
3. Safety Warning Decals
4. Flap Guard
5. Rubber Guard
6. Side Guard



SAFETY INFORMATION

General Safety Rules:

- ▲ Always read and follow the instructions for the use and maintenance of the machine before carrying out any work operations or servicing tasks.
- ▲ Improper use of the machine is both highly dangerous to persons and damaging to the machine components – only use the machine for its designated task.
- ▲ Both operators and the maintenance fitters should be familiar with the machine and fully aware of dangers surrounding improper use or incorrect repairs.
- ▲ Before starting, checks to both tractor and machine must be carried out as regards: functionality, road safety, accident prevention rules.
- ▲ Even when using the machine correctly, stones or other objects may be thrown a long distance. Therefore nobody must stand within the danger area. Special attention must be paid when working near roads or buildings.
- ▲ Use tractor's fitted with safety cabs.
- ▲ The condition of flails and of machine guards must be checked before beginning the daily work - they must be replaced if damaged or missing before you use the machine.
- ▲ During checks or repairs, make sure nobody could start the machine by mistake.
- ▲ Never wear loose or fluttering clothes.
- ▲ Never carry passengers on the tractor.
- ▲ Never carry passengers on the machine.
- ▲ Never connect the power takeoff with the engine running.
- ▲ Never approach the machine until the rotor has completely stopped.
- ▲ Do not enter the working zone of the PTO shaft. It is dangerous to approach the rotating parts of a machine.
- ▲ Keep the PTO shaft guard in good condition.
- ▲ Before starting, check the surrounding area for the likely presence of children and/or animals.
- ▲ Do not stand near the machine when it is operating.
- ▲ The PTO shaft must be assembled and disassembled only with the engine stopped and the starting key removed.
- ▲ Before connecting the power takeoff, check that the speed and the rotational direction correspond to those of the machine.
- ▲ Immediately replace missing or damaged safety decals.
- ▲ Before leaving the tractor with the machine attached, proceed as follows:
 1. Disconnect the power takeoff,
 2. Put the machine steadily on the ground using the tractor's hydraulic lift.
 3. Apply the hand brake and, if the ground is steeply sloping, wedge the tractor.
 4. Remove the starting key.

Transportation Safety

- ▲ In transport, reduce speed, especially on bumpy roads, the weight of the machine may render driving difficult and damage the machine itself.
- ▲ Ensure the levers that operate the hydraulic lift are locked, to avoid the lowering of the machine during transport.
- ▲ When driving on public roads, respect all road rules in force.
- ▲ Never transport the machine with the rotor running, even for short distances.

Operating Safety

- ▲ Pay special attention when working with the machine not to touch fixed objects such as road drain, walls, shafts, kerbs, guard rails, tracks etc. This could cause the breakage of the flails, which would be thrown out of the machine at very high speed.
- ▲ If wires, ropes or chains should become entangled in the rotor stop immediately to prevent damage or dangerous situations; stop the rotor and the tractor, take out the starting key. Put working gloves on; clear the rotor with the aid of pliers or shears. Do not try to disentangle by inverting the rotational direction of the rotor.
- ▲ Do not use the machine when excessive vibration is experienced, as this may cause breakage and serious damage - find the cause of the vibration and eliminate it before using the machine again.

Although the information given here covers a wide range of safety subjects, it is impossible to predict every eventuality that can occur under differing circumstances whilst operating this machine. No advice given here can replace 'good common sense' and 'total awareness' at all times, but will go a long way towards the safe use of your Twose machine.

SAFETY DECALS



1. Danger; do not work under a raised or unsupported machine.
2. Danger zone, keep clear; risk from crushing.
3. Keep clear of working machine; risk from projection of objects.
4. Keep a safe distance from the machine at all times; risk from raised machine.
5. Always switch machine off, remove starting key and read instruction manual before performing service or maintenance work on the machine.
6. Risk of hand or feet injuries; always ensure all machine safety guards are in place when the machine is running.
7. Keep a safe distance from the machine at all times; risk of entanglement.
8. Ensure nuts and bolts are kept tight.
9. Read the manual first before attempting to operate or service the machine.

VEHICLE / TRACTOR PREPARATION

We recommend vehicles are fitted with cabs using 'safety glass' windows and protective guarding when used with our machines. Remember the driver must be looking through mesh and/or polycarbonate glazing when viewing the machine in all work positions unless the vehicle/cab manufacturer can demonstrate that the penetration resistance is equivalent to, or higher than, that provided by mesh/polycarbonate glazing. If the tractor has a roll bar only, a frame must be made to carry both mesh and polycarbonate glazing. The operator should also use personal protective equipment to reduce the risk of serious injury such as; eye protection (mesh visor to EN1731 or safety glasses to EN166), hearing protection to EN352, safety helmet to EN297, gloves, filter mask and high visibility clothing.

Vehicle Ballast

It is imperative when attaching 'third-party' equipment to a vehicle that the maximum possible stability of the machine and vehicle combination is achieved – this can be accomplished by the utilisation of 'ballast' in order to counter-balance the additional equipment added.

Front weights may be required for rear mounted machines to place 15% of total outfit weight on the front axle for stable transport on the road and to reduce 'crabbing' due to the drag of the cutting unit when working on the ground.

Where a machine works to the side of the tractor rear weights may be required to maintain a reasonable amount of rear axle load on the opposing wheel.

All factors must be addressed in order to match the type and nature of the equipment added to the circumstances under which it will be used - factors that effect stability are:

- Centre of gravity of the tractor/machine combination.
- Geometric conditions, e.g. position of the cutting head and ballast.
- Weight, track width and wheelbase of the tractor.
- Acceleration, braking, turning and the relative position of the cutting unit during these operations.
- Ground conditions, e.g. slope, grip, load capability of the soil/surface.
- Rigidity of implement mounting.

Suggestions to increase stability:

- Increasing rear wheel track - *a vehicle with a wider wheel track is more stable.*
- Ballasting the wheel; it is preferable to use external weights but liquid can be added to around 75% of the tyre volume – water with anti-freeze or the heavier Calcium Chloride alternative can be used.
- Addition of weights – care should be taken in selecting the location of the weights to ensure they are added to a position that offers the greatest advantage.
- Front axle locking, check with tractor manufacturer.

The advice above is offered as a guide for stability only and is not a guide to vehicle strength. It is therefore recommended that you consult your vehicle manufacturer or local dealer to obtain specific advice on this subject, additionally advice should be sought from a tyre specialist with regard to tyre pressures and ratings suitable for the type and nature of the machine you intend to fit.

ATTACHING THE MACHINE TO THE TRACTOR

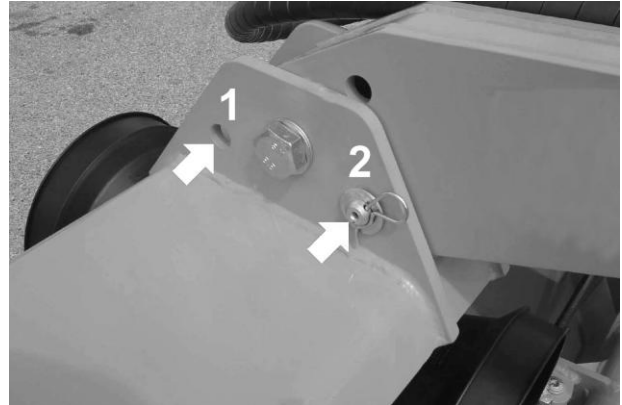
Attachment of the machine to the tractor should always be performed on a firm level site.

Upper Linkage Position

The upper linkage of the machine has two working modes to allow the machine to be mounted and operated either on the front of the tractor or on the rear:

1. Front Mounted Linkage Position
2. Rear Mounted Linkage Position

To swap the linkage position, remove the position locking pin and swing the linkage over to the opposing side of the machine, replace the position locking pin and secure in place with a locking clip



NOTE: The position locking pin must always be in position during attachment and transportation of the machine but can be removed during work for a floating position. Always remember to replace the pin before re-transporting the machine.

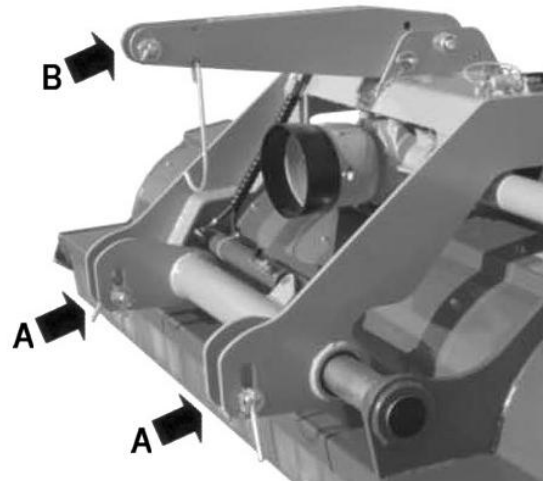
Linkage Points

- A – Lower Attachment Points (Linkage Arms)
- B – Upper Attachment Point (Top Link)

Attachment to Tractor

Determine if the machine is to be front mounted or rear mounted and set the upper linkage into the required position as described above.

Position the tractor's lower linkage at the same height as the machines lower attachment points; indicated 'A' opposite.



Remove the machine lower linkage pins from location 'A'.

Carefully manoeuvre the tractor squarely to the machine and into its position within the attachment points – fine adjustment of the tractor lower linkage height may be necessary to correctly position the linkage and permit refitting of the linkage pins.

Insert linkage pins at location 'A' and secure in position with locking clips.

Fit top link to upper attachment point 'B'.

Raise the machine on the tractors hydraulics and adjust top link so that the machine is parallel to the ground.

Fit and adjust check chains and/or stabiliser bars to lock the machine into a central position on the tractor.

Connect hydraulics.

Fit PTO shaft and attach torque chains to a suitable location – refer to following page for details of PTO measurement and shaft length adjustment.

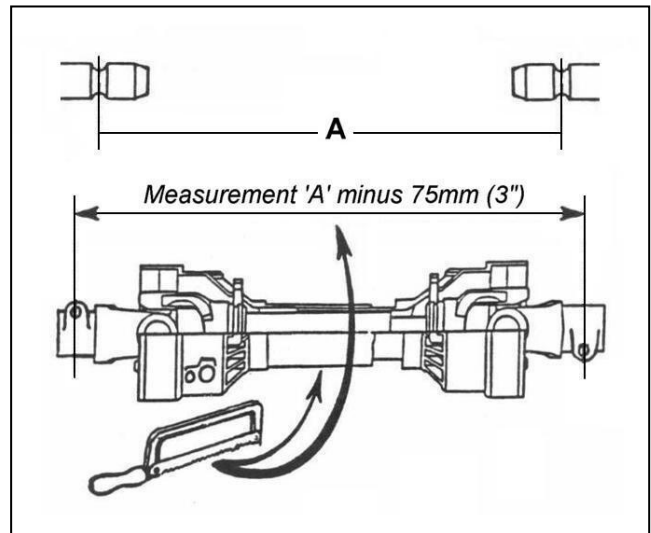
PTO Shaft Measurement

Measure the PTO shaft and cut to the dimension shown – the finished length of the PTO shaft should be 75mm (3") less than the measured distance 'A' - between tractor shaft and gearbox stub shaft - to enable fitting.

NOTE:

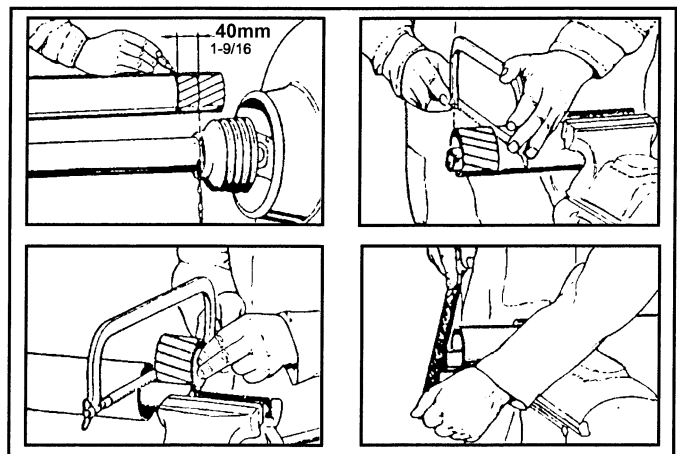
For subsequent use with different tractors measure again, there must be a minimum shaft overlap of 150mm (6").

Fit PTO in position and attach the torque chains to a convenient location to prevent the shaft guards from rotating.



PTO Shaft Length Adjustment

1. Shorten outer plastic tube to 40mm less than the shortest envisaged shaft length.
2. Remove the marked tube.
3. Remove same length from inner plastic tube and metal shaft profiles (inner and outer).
4. De-burr all edges and remove 'swarf' to ensure smooth operation.



Pre-Operational Checks

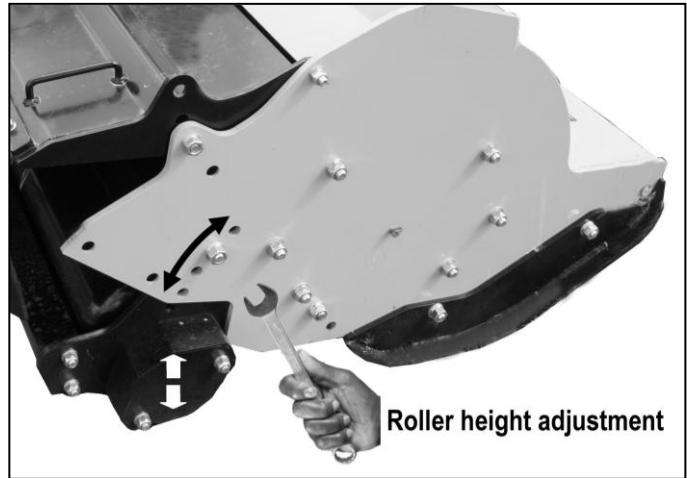
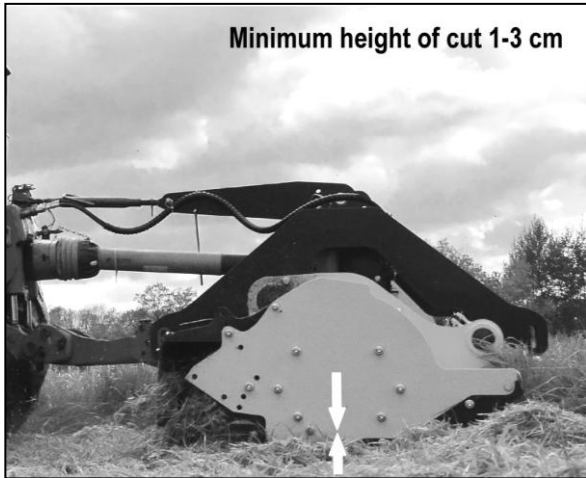
Before commencing work with the machine the following checks should be performed:

- Make a visual inspection of the machine to ensure it is in good operational condition.
- Check all safety guarding is in position and in full working order.
- Check rotor for missing or damaged flails and replace if required.
- Check all greasing points are well lubricated.
- Check gearbox oil level.
- Check belt tension and adjust if required.
- Check PTO speed and direction match that of the machine.

SETTING UP AND ADJUSTMENT

Cutting Height

The height of cut is dependent on working conditions and the volume of material. The cutting height can be regulated with the hydraulic system on the tractor and/or adjusted by the height setting of the rear roller. The minimum height of cut should be between 1-3 cm.



NOTE: The machine must always run on the rear roller not on the side skids; side skids are a protection feature and in normal working conditions remain clear of the ground. Do not allow the rotor flails to contact the ground; set roller height to allow a minimum flail to ground clearance of 1 to 3 cm.

Top Linkage 'Floating' Mode

The top linkage position has 2 work modes; fixed or floating. Float mode should be used when working on hilly or uneven terrain to avoid damage to the machine and/or linkage. Float mode is selected by removal of the pin indicated in the photo opposite allowing the upper linkage position freedom to move. **Locking pin must be replaced to fix the position when transporting the machine.**



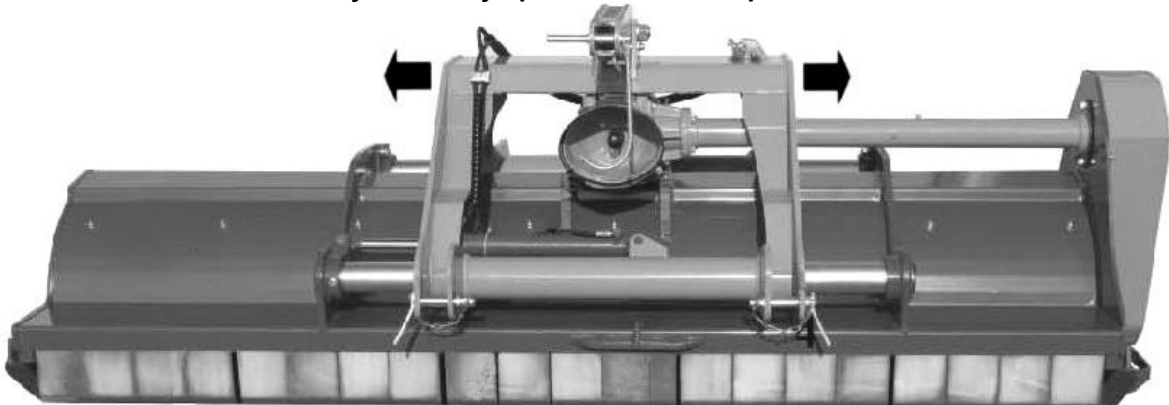
Remove pin for 'floating' mode

Offsetting

The machines feature a hydraulically operated offsetting capability that offers up to 530mm of sideways shift; this allows the machines to cut larger areas of material beyond the tractors wheel tracks and is particularly useful for verge mowing duties or when working in areas of limited or restricted accessibility.



Hydraulically operated offset of up to 530mm



Drive System

Power from the tractor via the machines gearbox and half-shaft is transferred to the rotor through a set of 5 belts.

Correct tensioning of the belts is required for both optimal operation of the machine and long lasting belt life; in order to ensure correct belt tension the machines are fitted with automatic belt tensioning.

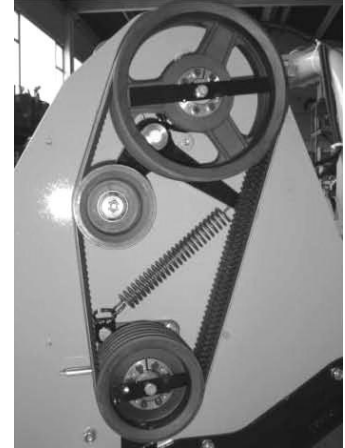
Check tightness of the taper lock bolts on a regular basis; the torque setting is 45Nm.

Belt Tensioning System

Machines are fitted as standard with an automatic belt tensioning system. The system consists of a spring tensioned strain pulley that permanently runs on the belts exerting sufficient pressure to keep the belts correctly tensioned.

No other adjustment or maintenance will be required on the belt tensioning system other than routine inspection and general cleaning of components when inspecting belt wear.

WARNING: Checking of belts and drive components should only be carried out with tractors engine switched off, starting key removed and the PTO shaft disconnected. Never attempt to run the machine with the belt guard removed.



Machine RPM

Machines are 1000RPM; before operating the machine always ensure the RPM is compatible with the tractor PTO speed, this is particularly important on tractors that have different PTO speeds front and rear.

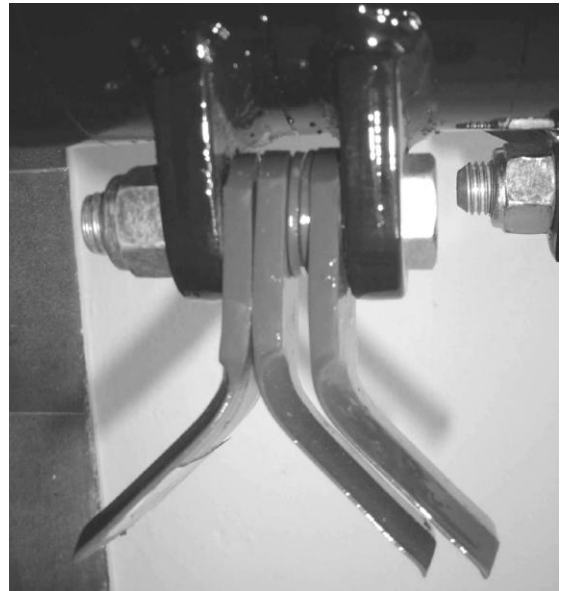
WARNING: Always check machine and tractor PTO speeds are compatible before using the machine.

Flail Types

Two types of flails are available for use with the machines; these are as shown below.



Hammer Flails



Y-Flails

OPERATION

Ensure that the operator is suitably qualified to use a machine of this nature and that they have fully read and understood this manual - they should be aware of all safety aspects relating to the safe use of the machine. It is advisable that all 'first time' operators practice using the machine in a clear safe area prior to work in order to familiarise themselves with its operation.

After the initial first 2 hours work with a new machine all nuts and bolts should be checked for tightness and re-tightened if required.

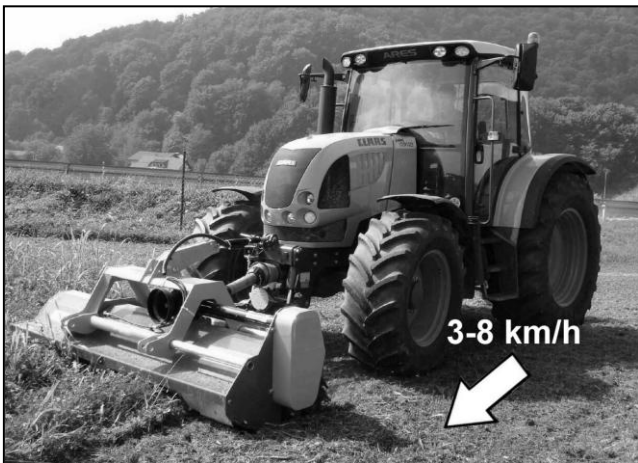
Prior to starting work the area should be checked for dangerous objects such as large stones, wood, wire, rope, glass etc. – *hazardous objects should be removed from the area prior to operation with the machine.* The location of unmovable or natural hazards should be noted, or if necessary 'marked' to indicate to the operator that the area should either be avoided or additional caution adopted whilst working around the hazard.

Starting Work

With the machine switched off, lower it into a position approximately 10 cm above the ground, start the machine and allow it to build up to the correct working speed before gently lowering the it onto the ground - the machine is now in its work position and forward travel can begin.

Forward Speed

The forward working speed will depend on the working conditions and nature of the material being cut. Optimal speed will be in the region of 3-8 km/h (2-5 mph).



Optimal forward working speed 3-8 km/h



Raise the machine before turning or reversing

Reversing & Turning

When reversing or turning the unit the machine must always be lifted clear of the ground to avoid damage.

Transport

The following information must be observed at all times when transporting the machine;

- Machine must always be switched off and the PTO shaft disconnected.
- Machine must be raised and placed into its central position.
- Speed must be kept to a minimum especially on bumpy roads or terrain.
- Abide with local laws and road regulations.
- Be aware of the machines width.

DETACHMENT & STORAGE

Detaching the machine from the tractor

- Removal of the machine should be performed on a firm level site. The procedure for detachment is as follows:
- Place the machine in its central position.
- Gently lower the machine fully to the ground.
- Switch off the tractor and remove its starting key.
- Detach hydraulic hoses from the tractor service and stow them neatly on the machine.
- Remove the PTO driveshaft.
- 'Chock' the rear roller to prevent movement of the machine during the detachment procedure and whilst in storage.
- Remove the top link and both pins from the lower attachment points.
- Carefully and slowly drive the tractor clear of the machine.
- Clean and lubricate the machine in preparation for next use.

Storage

For extended periods of storage it is advisable that the machine be kept in a clean dry environment protected from the elements to avoid risk of corrosion. The machine should be thoroughly cleaned and lubricated prior to storage. At this point it is good practice to check the machine for worn or damaged components - any parts that require replacing should be ordered and fitted at the earliest opportunity so the machine is fully prepared for the next seasons work.

MAINTENANCE

All maintenance, cleaning and repair operations must be performed with the machine firmly lowered to the ground and detached from the tractor or with the PTO disconnected, engine switched off and starting key removed. For any repairs or maintenance that requires access from underneath, the machine should be firmly and safely raised and propped using suitable purpose designed supports capable of bearing the machines full weight. Care should be adopted at all times when working with or under a raised machine.

Maintenance Tasks

The following preventative maintenance tasks should be performed at the timescales stated to both maximise efficiency and prolong the working life of the machine.

After first 2 hours of work - new machine or machine fitted with new belts.

- ✓ Check all nuts and bolt for tightness – *retighten if required.*
- ✓ Check condition of belts and tightness of taper locks – *re-torque if required.*

After every 8 hours of work

- ✓ Check all nuts and bolt for tightness – *retighten if required.*
- ✓ Check condition of belts and tightness of taper locks – *re-torque if required.*
- ✓ Check wear and condition of flails – *replacing missing, or damaged flails immediately.*
- ✓ Check condition of safety guards – *repair or replace if not performing their function.*
- ✓ Lubricate grease points – *see below for locations of the machines grease points.*
- ✓ Check gearbox oil level – *top up if required.*
- ✓ Check rotor – *remove foreign objects that may be fouling or lodged in the rotor.*
- ✓ Check frame and 3-point hitch – *ensure all components are in a safe working condition.*

After every 100 hours

- ✓ Grease PTO driveshaft – *separate telescopic drive and apply grease to internal shaft.*

Every 12 months

- ✓ Change gearbox oil

Grease Points

Lubricate the grease points indicated below on a daily basis using type LIS 3 grease.



RH Rotor Shaft Bearing



LH Rotor Shaft Bearing



Strain Pulley Bearing

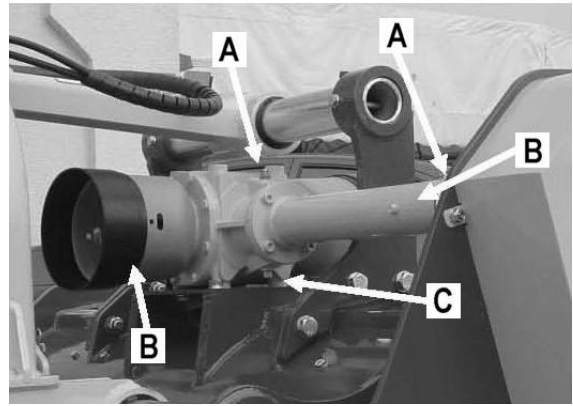
Gearbox & Half-shaft Lubrication

The illustration opposite indicates the location of the lubrication access points for the gearbox and half-shaft.

Lubricant level should be checked on a daily basis during work and topped up only if required.

- A. Filler Plugs
- B. Level Plugs*
- C. Drain Plug

* Gearbox oil level plug accessed via the PTO shield.



Checking the oil level is performed by removing the level plugs 'B' located on the gearbox and the half-shaft; lubricant should be inline with the bottom of these apertures.

Topping up the lubricant is performed via filler plugs 'A' to a point where the oil starts to drip out of the level plug 'B' apertures. Replace and tighten the plugs before using the machine.

Gearbox oil should be replaced on an annual basis; draining the gearbox and half-shaft is via the common drain plug 'C'.

Gearbox & Half-shaft Capacities & Lubricant

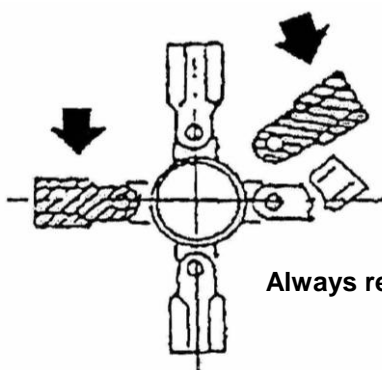
4,2 Litres SAE 90 – FT250M Model

4,5 Litres SAE 90 – FT270M & FT300M Models

Flail replacement

The rotor and flails should be inspected for wear or damage on a regular basis – missing, damaged or worn flails should be replaced immediately. When replacing a flail the diametrically opposite flail should also be replaced at the same time in order to maintain rotor balance.

DANGER: Machine and tractor should be switched off and the starting key removed at all times when inspecting or maintaining the machine – Never work on a machine that is switch on and running.



Always replace flails in opposing pairs

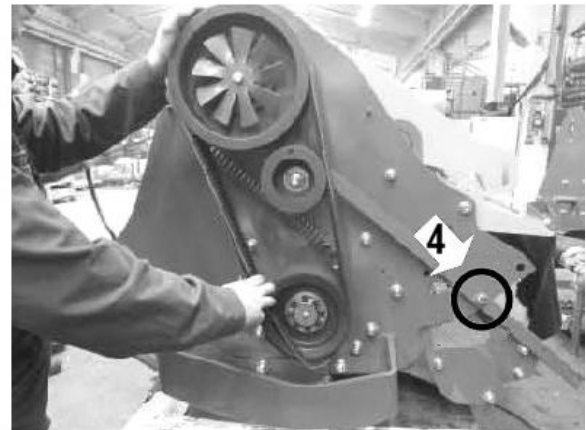
Rotor Vibration

If vibration of the rotor is experienced the machine should be stopped immediately; this is often a sign that a flail is either missing or severely damaged, if this is the case do not use the machine until the problem has been rectified. If vibration continues, or occurs for no apparent reason, the rotor must be checked and, if necessary, rebalanced before using the machine again. Contact your local dealer for further advice or assistance on this subject.

Drive Belts Replacement

The machines 5 drive belts must be inspected for signs of damage or wear on a regular basis and must be replaced immediately if found to be worn or damaged, always replace the belts in complete sets; *the procedure for replacing the drive belts is shown below.*

1. Remove belt guard.
2. Place a suitable metal lever* between the upper belt pulley and strain pulley.
3. Force lever downwards to release tension from the belts.
4. Secure lever in a position where the belts remain un-tensioned.
5. Belts can now be removed and replacements fitted.
6. Carefully remove lever allowing the strain pulley to place tension on the belts; *ensure all the belts are seated correctly.*
7. Replace belt guard and secure in position.



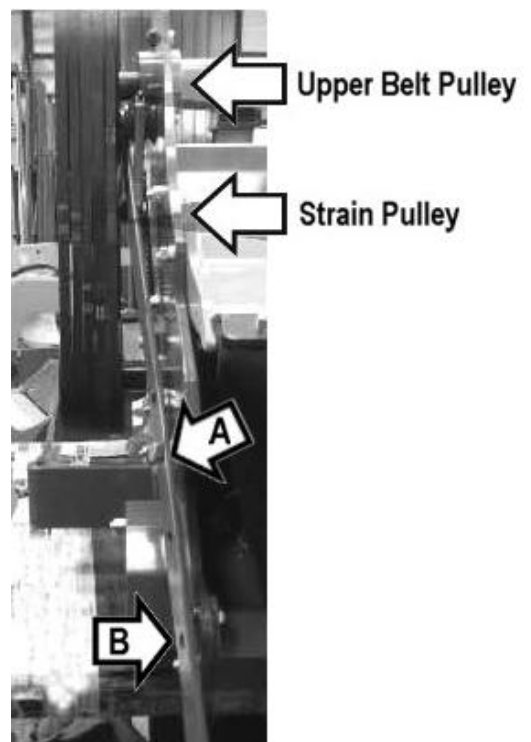
Belt Removal Lever*

To aid belt removal a suitable lever (A) can be made from a 1 meter flat metal bar with a 10mm hole at a position (B) allowing it to be secured to the frame of the machine with a nut and bolt.

This bar can then be fixed in a levering position between the upper belt pulley and the strain pulley to safely hold the strain pulley away from the belts for ease of removal and replacement.

New Belts

When new belts have been fitted on the machine they should be checked after the initial first 2 hours of work.



TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSES	REMEDIES
Irregular Cut	Worn, bent or broken flails	<i>Replace flails</i>
	RPM too low	<i>Increase RPM</i>
	Machine not level to the ground	<i>Correct mounting on tractor</i>
	Clogged material caused by excessive forward speed	<i>Reduce forward speed</i>
Noise	Loose bolts	<i>Check and tighten bolts</i>
	Damaged components	<i>Repair or replace</i>
Noisy gearbox	Lack of lubrication	<i>Top up oil to correct level</i>
	Worn gears	<i>Replace worn components</i>
	Worn bearings	<i>Replace worn components</i>
Vibration	Broken, worn or missing flails	<i>Replace flails</i>
	Rotor out of balance	<i>Balance or replace rotor</i>
	Worn rotor bearings	<i>Replace rotor bearings</i>
Excessive backlash in joints	Worn pins	<i>Replace pins</i>
Damaged bearings	Bearings dirty or ungreased	<i>Clean and grease</i>
	Violent lowering down of machine	<i>Lower machine gently</i>
Belts overheating	Belts slipping on pulleys	<i>Worn belts, replace</i>
	Flails contacting the ground	<i>Raise cutting height</i>
	Working speed too high	<i>Reduce working speed</i>

Machine Disposal

Disposal of this machine and any of its component parts must be performed in a responsible and inoffensive manner respecting all current laws relating to this subject. Materials forming this machine that must undergo differentiated division and disposal are:

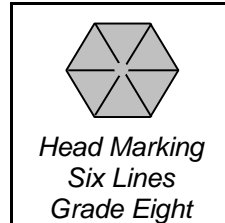
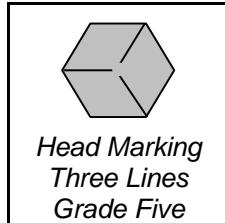
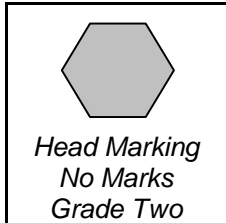
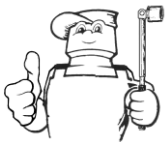
- Steel
- Mineral Oil
- Rubber
- Plastic

TORQUE SETTINGS FOR FASTENERS

The Chart below lists the correct tightening torque for fasteners. The Chart should be referred to when tightening or replacing bolts in order to determine the grade of bolt and the correct torque unless specific torque values are assigned in the text of the manual.

Recommended torque is quoted in Foot-Pounds and Newton-Metres within this manual. The equation for conversion is 1 Nm. = 0.7376 ft.lbs

TORQUE VALUES FOR IMPERIAL BOLTS



NOTE:
The values in the chart apply to fasteners as received from the supplier, dry or when lubricated with normal engine oil. They **DO NOT** apply if special graphited, molydisulphide greases, or other extreme pressure lubricants are used. This applies to both UNF and UNC coarse threads.

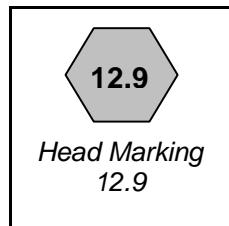
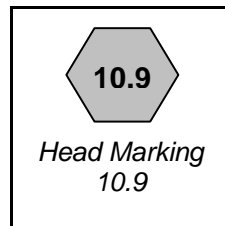
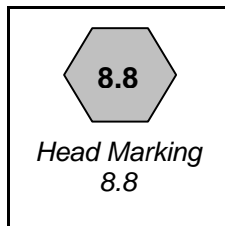
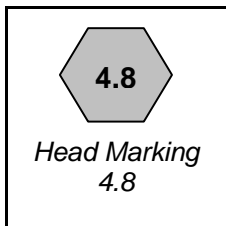
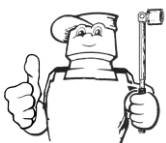
Bolt Dia.
1/4"
5/16"
3/8"
7/16"
1/2"
9/16"
5/8"
3/4"
7/8"
1"
1-1/8"
1-1/4"
1-3/8"
1-1/2"

Value (Dry)	
ft.lb.	Nm.
5.5	7.5
11	15.0
20	27.0
32	43.0
50	68.0
70	95.0
100	135.0
175	240.0
175	240.0
270	360.0
375	510.0
530	720.0
700	950.0
930	1250.0

Value (Dry)	
ft.lb.	Nm.
9	12.2
18	25.0
33	45.0
52	70.0
80	110.0
115	155.0
160	220.0
280	380.0
450	610.0
675	915.0
850	115.0
1200	1626.0
1550	2100.0
2100	2850.0

Value (Dry)	
ft.lb.	Nm.
12.5	17.0
26	35.2
46	63.0
75	100.0
115	155.0
160	220.0
225	305.0
400	540.0
650	880.0
975	1325.0
1350	1830.0
1950	2650.0
2550	3460.0
3350	4550.0

TORQUE VALUES FOR METRIC BOLTS.



Bolt Dia.
6mm
8mm
10mm
12mm
14mm
16mm
18mm
20mm
22mm
24mm
27mm
30mm

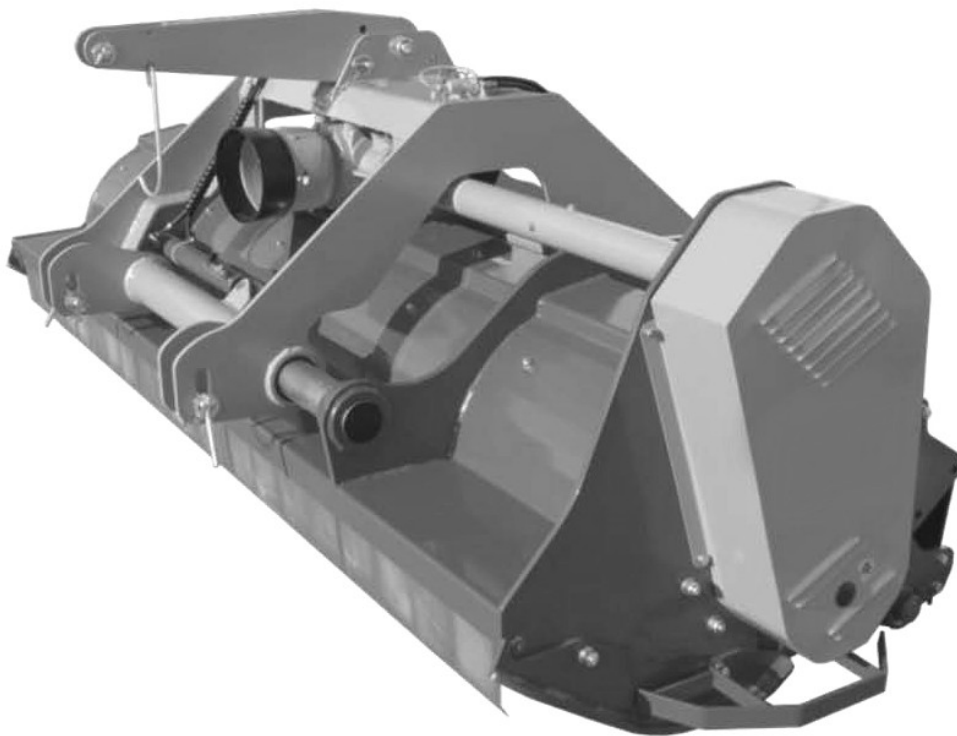
Value (Dry)	
ft.lb.	Nm.
4.5	6.1
11	14.9
21	28.5
37	50.2
60	81.4
92	125.0
125	170.0
180	245.0
250	340.0
310	420.0
450	610.0
625	850.0

Value (Dry)	
ft.lb.	Nm.
8.5	11.5
20	27.1
40	54.2
70	95.0
110	150.0
175	240.0
250	340.0
350	475.0
475	645.0
600	810.0
875	1180.0
1200	1626.0

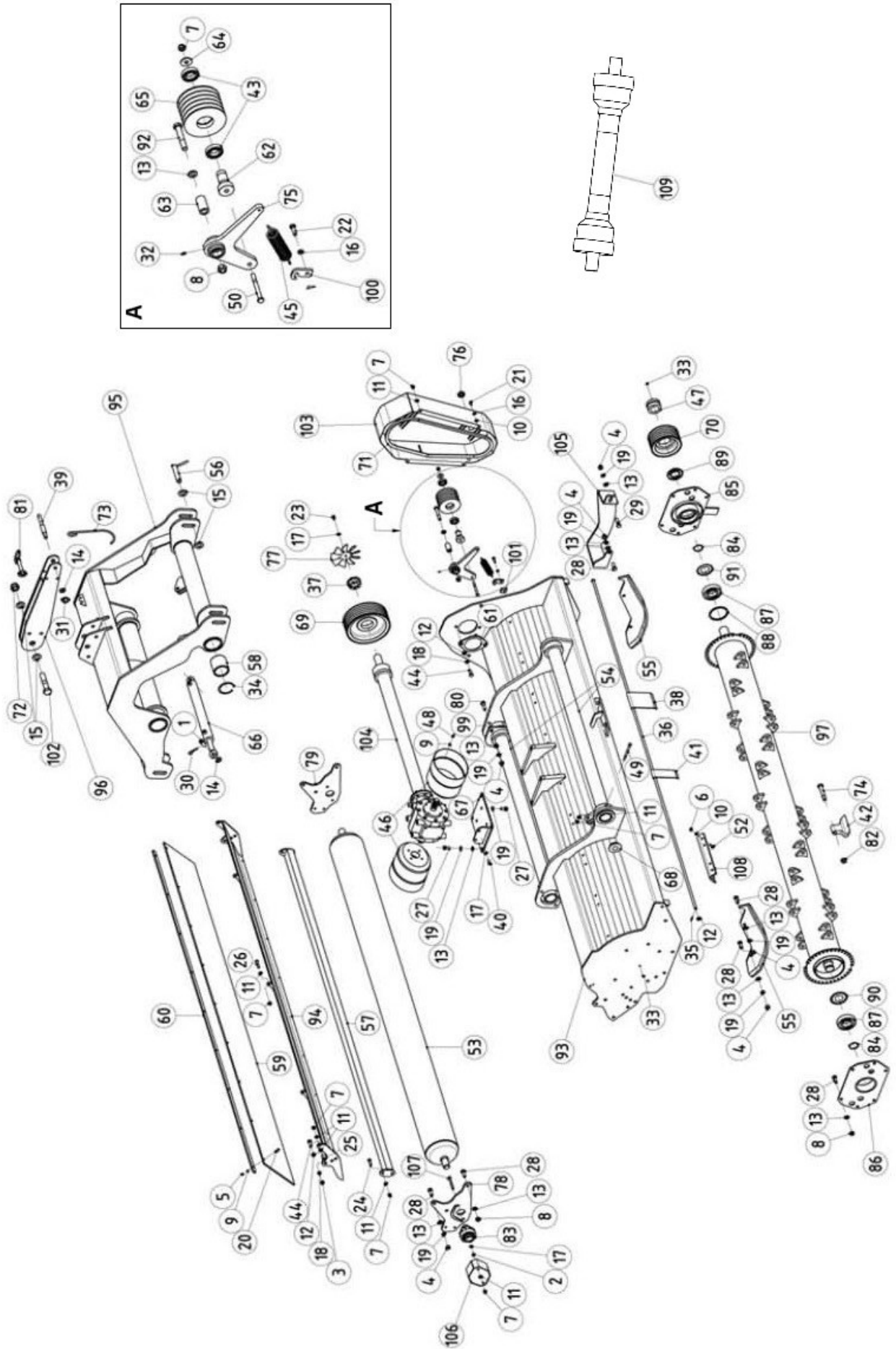
Value (Dry)	
ft.lb.	Nm.
12	16.3
30	40.1
60	81.4
105	140.0
165	225.0
255	350.0
350	475.0
500	675.0
675	915.0
850	1150.0
1250	1700.0
1700	2300.0

Value (Dry)	
ft.lb.	Nm.
14.5	20.0
35	47.5
70	95.0
120	160.0
190	260.0
300	400.0
410	550.0
580	790.0
800	1090.0
1000	1350.0
1500	2000.0
2000	2700.0

FT-Premium Series Shredder/Mowers
Models: FT250M / FT270M / FT300M
Parts Manual



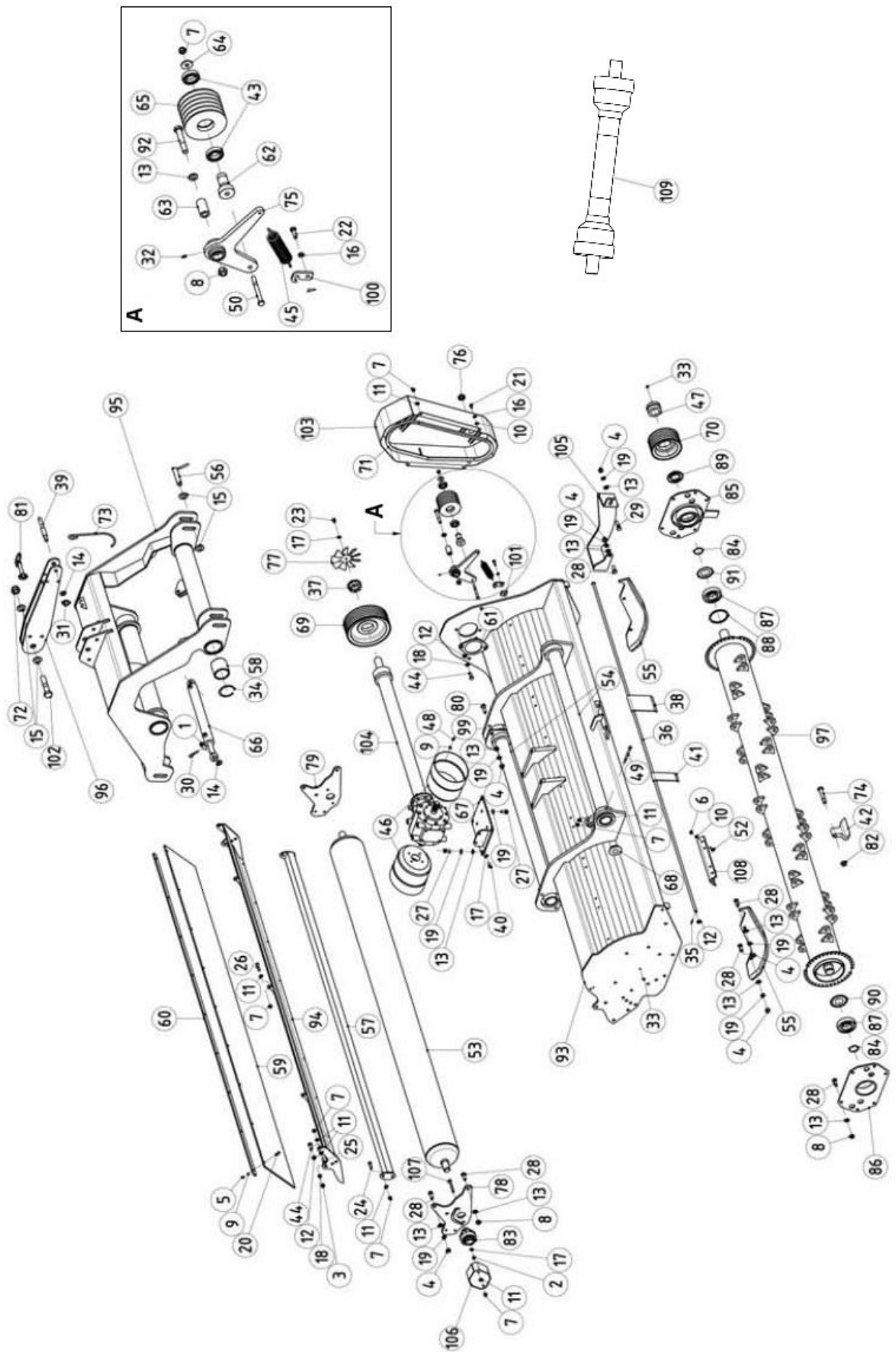
FT-PREMIUM SERIES MOWER ASSEMBLY



FT-PREMIUM SERIES MOWER ASSEMBLY

REF.	DESCRIPTION	PART No.	QUANTITY		
			250	270	300
1	PIN	1061532	2	2	2
2	NUT	9113006	4	4	4
3	NUT	1061042	2	2	2
4	NUT	9113007	11	11	11
5	SELF-LOCKING NUT	9163004	9	9	9
6	SELF-LOCKING NUT	9163005	24	28	32
7	SELF-LOCKING NUT	9163006	18	18	18
8	SELF-LOCKING NUT	9163007	15	15	15
9	WASHER	9100104	17	17	17
10	WASHER	9100105	26	30	34
11	WASHER	9100106	19	19	19
12	WASHER	05.281.14	6	6	6
13	WASHER	0100106	30	30	30
14	WASHER	9100108	3	3	3
15	WASHER	1062006	6	6	6
16	SPRING WASHER	9100205	3	3	3
17	SPRING WASHER	9100206	7	7	7
18	SPRING WASHER	05.282.08	4	4	4
19	SPRING WASHER	9100207	19	19	19
20	BOLT	9213064	9	9	9
21	BOLT	9313045	2	2	2
22	BOLT	9213075	1	1	1
23	BOLT	9313046	1	1	1
24	BOLT	9213086	4	4	4
25	BOLT	9213096	2	2	2
26	BOLT	9213116	3	3	3
27	BOLT	9313067	6	6	6
28	BOLT	9313097	20	20	20
29	BOLT	9213127	1	1	1
30	PIN	1062197	2	2	2
31	PIN	1061097	1	1	1
32	GREASE NIPPLE	1061554	1	1	1
33	GREASE NIPPLE	1061079	2	2	2
34	CIRCLIP	1061175	4	4	4
35	SPLIT PIN	1061077	1	1	1
36	FLAP BAR (250)	1061148	1	-	-
	FLAP BAR (270)	1061272	-	1	-
	FLAP BAR (300)	1061273	-	-	1
37	TAPERLOCK	1061163	1	1	1
38	FLAP	1061171	16	18	20
39	CONNECTION PIN	1061168	1	1	1
40	BOLT	9213066	-	2	2

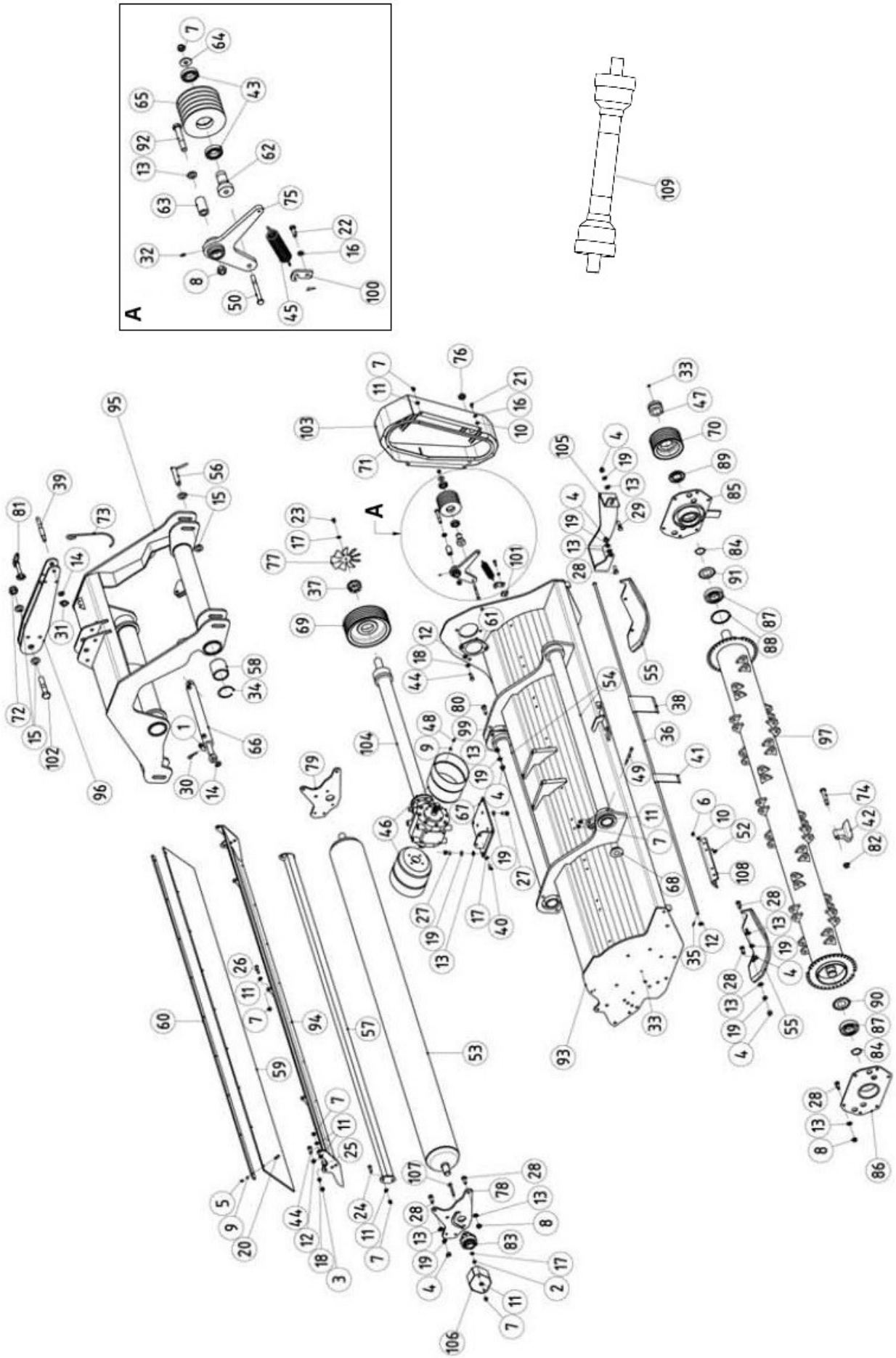
FT-PREMIUM SERIES MOWER ASSEMBLY



FT-PREMIUM SERIES MOWER ASSEMBLY

REF.	DESCRIPTION	PART No.	QUANTITY		
			250	270	300
41	FLAP 95	1061369	1	-	-
	FLAP 55	1061275	-	1	-
	FLAP 70	1061170	-	-	1
42	HAMMER	1062198	20	24	26
43	BEARING	1061336	2	2	2
44	BOLT	1061687	4	4	4
45	SPRING PIN	1061377	1	1	1
46	PTO SHIELD	1061046	2	2	2
47	TAPERLOCK	1061373	1	1	1
48	BOLT	9313034	8	8	8
49	BOLT	9213286	2	2	2
50	BOLT	1062226	1	1	1
51	BOLT	9313077	2	2	2
52	BOLT	9213065	24	28	32
53	REAR ROLLER (250)	1061680	1	-	-
	REAR ROLLER (270)	1061981	-	1	-
	REAR ROLLER (300)	1061682	-	-	1
54	SLIDING TUBE	1061259	2	2	2
55	SKID	1061266	2	2	2
56	PIN	1061268	2	2	2
57	SCRAPER (250)	1062199	1	-	-
	SCRAPER (270)	1061278	-	1	-
	SCRAPER 300	1061279	-	-	1
58	BUSHING	1061277	4	4	4
59	RUBBER GUARD (250)	1062228	1	-	-
	RUBBER GUARD (270)	1061291	-	1	-
	RUBBER GUARD (300)	1061292	-	-	1
60	CLAMP BAR (250)	1062229	1	-	-
	CLAMP BAR (270)	1061288	-	1	-
	CLAMP BAR (300)	1061289	-	-	1
61	FLANGE	1061400	1	1	1
62	PIN	1061333	1	1	1
63	BUSHING	1061331	1	1	1
64	WASHER	1061337	1	1	1
65	STRAIN PULLEY	1061335	1	1	1
66	HYDRAULIC RAM	1061294	1	1	1
67	PLATE	1061688	1	1	1
68	CAP	1061668	4	4	4
69	PULLEY 280/80-5	1061365	1	1	1
70	PULLEY 190/85-5	1061363	1	1	1
71	BELT	1061364	5	5	5
72	NUT	1062036	1	1	1
73	PTO HOOK	1061551	1	1	1

FT-PREMIUM SERIES MOWER ASSEMBLY



FT-PREMIUM SERIES MOWER ASSEMBLY

REF.	DESCRIPTION	PART No.	QUANTITY		
			250	270	300
74	BOLT	9213248	20	24	26
75	STRAIN LEVER	1062200	1	1	1
76	CAP	1062046	1	1	1
77	VENTILATOR	1061566	1	1	1
78	ROLLER BRACKET (RIGHT)	1062201	1	1	1
79	ROLLER BRACKET (LEFT)	1062202	1	1	1
80	BOLT	9213117	4	4	4
81	PIN	1062172	1	1	1
82	NUT	1062173	20	24	26
83	BEARING WITH CASING	1062203	2	2	2
84	CIRCLIP	1062175	2	2	2
85	BEARING CASING (LEFT)	1062176	1	1	1
86	BEARING CASING (RIGHT)	1062177	1	1	1
87	BEARING	1062181	2	2	2
88	CIRCLIP	1062182	1	1	1
89	OIL WASHER	1062183	1	1	1
90	WASHER	1062184	1	1	1
91	WASHER	1062185	1	1	1
92	BOLT	9213207	1	1	1
93	FRAME (250)	1062204	1	-	-
	FRAME (270)	1062205	-	1	-
	FRAME (300)	1062206	-	-	1
94	REAR GATE (250)	1062207	1	-	-
	REAR GATE (270)	1062208	-	1	-
	REAR GATE (300)	1062209	-	-	1
95	LINKAGE	1062210	1	1	1
96	UPPER LINKAGE	1062211	-	1	1
97	ROTOR ASSEMBLY c/w HAMMERS (250)	1062212	1	-	-
	ROTOR ASSEMBLY c/w HAMMERS (270)	1062213	-	1	-
	ROTOR ASSEMBLY c/w HAMMERS (300)	1062214	-	-	1
98	BUSHING (RIGHT)	1062215	1	1	1
99	BUSHING (LEFT)	1062216	1	1	1
100	SPRING HOOK	1062217	1	1	1
101	SPACER	1062218	1	1	1
102	BOLT	1062219	1	1	1
103	BELT GUARD	1062284	1	1	1
104	GEARBOX	1062221	1	-	-
	GEARBOX	1062222	-	1	1
105	SHIELD/GUARD	1062223	1	1	1
106	BEARING GUARD	1062224	2	2	2
107	BOLT	9213206	4	4	4
108	COUNTER BLADE	1062225	12	14	16
109	PTO SHAFT	1061690	1	1	1

