Publication 335
May 2000

Part No.
41486.44

Operator manual

For

TOPPER 8

McCONNEL

EC DECLARATION OF CONFORMITY

Conforming to EEC Directive 89/392/EEC

We,

McCONNEL LIMITED, Temeside Works, Ludlow,
Shropshire SY8 1JL.

declare under our sole responsibility that

the product *(type)* LINKAGE MOUNTED PASTURE TOPPER

.....

Product Code TOP8

.....

Serial No. & Date [ ] Type [ ]

Manufactured by the above Company/* .....

.....

*(*insert business name and full address if not stated above)*

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complies with the required provisions of the Directive 89/392/EEC, and AMD 91/368/EEC, AMD 93/44/EEC, AMD 93/68/EEC and conforms with European Norm. BS EN 292.

Part 1:1991 Safety of Machinery – Terminology, methodology.
Part 2:1991 Safety of Machinery – Technical Specifications.

and other national standards associated with its design and construction as listed in the Technical File.

Signed Adrian Longstaff

on behalf of McCONNEL LIMITED *Responsible Person*

Status Director of Engineering Date 24th January 2001

READ THE BOOK FIRST

It might save hours and pounds later

When ordering spare parts always quote the machine type and serial number as well as the part number

NOISE

The equivalent daily personal noise exposure from this machine, measured at the operators' ear, is within the range 78 - 85 DB.

These figures apply to a normal distribution of use where noise fluctuates between zero and maximum. The figures assume that the machine is fitted to a tractor with a quiet cab with the windows closed in a generally open environment. We recommend that the windows are kept closed.

With the cab rear window open the equivalent daily personal noise exposure will increase to a figure within the range 82-88 DB.

At equivalent daily noise exposure levels of between 85 and 90 DB, ear protection is recommended, it should be used if any window is left open.

GENERAL INFORMATION

Read this manual before fitting or operating the machine. Whenever any doubt exists contact your dealer or the McConnel Service Department for assistance.

Use only McConnel spare parts on McConnel 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 the damage of either machine or equipment if not observed carefully.

NOTE

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

Left and Right-Hand

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

<table>
<tr><td colspan="2">Record the serial number of your machine on this page and always quote this number when ordering spares. Whenever information concerning the machine is requested remember to also state the type of tractor to which it is fitted.</td></tr>
<tr><td rowspan="2">MACHINE
SERIAL
NUMBER</td><td>INSTALLATION
DATE</td></tr>
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<tr><td colspan="2">MODEL
DETAILS</td></tr>
<tr><td colspan="2">DEALERS
NAME</td></tr>
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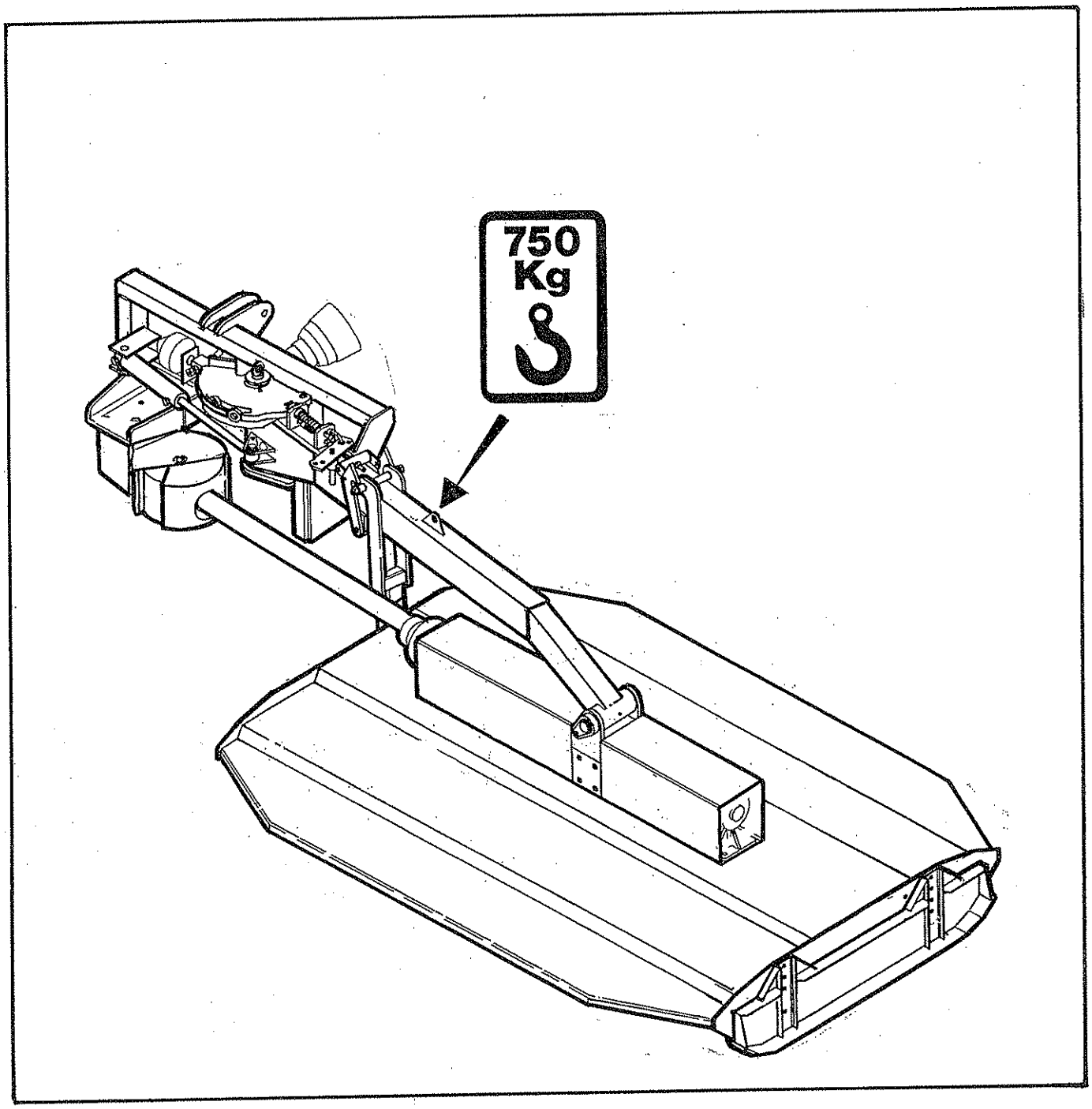
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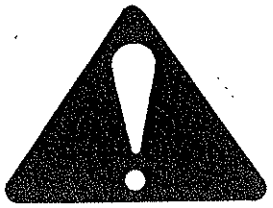
SAFETY PRECAUTIONS



WARNING ...

Add sufficient front weights where required to maintain tractor/machine stability. Drive slowly to prevent front wheels bouncing.

Set tractor wheel widths as wide as required to maintain sideways stability in all working conditions.

Operate the machine only on a tractor fitted with a roll over protection system. Wear seat belts if fitted. Do not alter the R.O.P.S. structure.

Make sure the P.T.O shield is installed when using P.T.O-driven equipment, and always replace the P.T.O shield if damaged.

Always wear 'Hard hats', safety glasses and safety footwear.

Never allow inexperienced or untrained personnel to operate the tractor/mower combination without supervision.

Always read and understand the instruction manual first. If anything is unclear consult your dealer or McConnel direct.

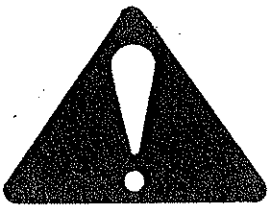
Always familiarise yourself with the controls in a clear area before commencing work.

Always engage all transport devices fitted. See operator manual for details.

Never transport the machine even for a short distance with the blades rotating.

If working across slopes turn very slowly. Never transport or operate on steep slopes.

Always operate the machine at the recommended P.T.O speed. Never exceed the maximum permitted.



Ensure the work area has been inspected and any dangerous or loose items are removed and that all mower head guards are in position and in good condition.

Never allow the blades to contact hard immoveable objects or to become entangled in wire.

Never allow riders on the tractor. Never lift a person with the Boom or Mower Head. **KEEP BYSTANDERS CLEAR.**

Inspect all machine parts regularly and maintain in safe working condition.

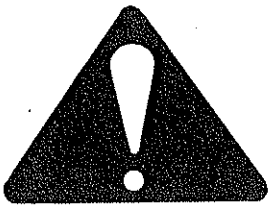
Never attempt to use the arm for any other purpose than manoeuvring the mower head.

Never allow anyone to stand close to the arm during operation.

Do not operate machine with high pressure oil leaks. Never test for oil leaks with your hand, use cardboard. If high pressure oil contacts the skin seek medical assistance instantly.

Never continue to operate the machine if a damaged or lost blade is causing vibration.

Never become complacent and ignore any safety instructions.



Always check all nuts, bolts, hoses and other fixings daily for tightness, security and damage. Repair immediately if required.

Should wire become entangled in the blades despite all precautions always remove it by unwinding by hand or by using shears.

Always replace a lost or damaged blade together with its opposite one in pairs as soon as possible.

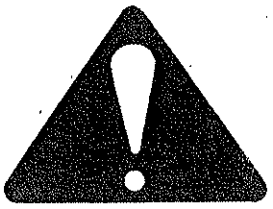
Never work or walk under a raised boom or head unless it is independently supported.

Always read carefully and comply fully with the manufacturers instructions when handling oil, solvents, cleansers and any other chemical agent.

Always maintain the safety decals in good readable condition. If the decals become damaged or unreadable, reorder them immediately.

Although designed to be as safe as possible flails are still dangerous. Always be aware of the potential hazards and operate with care and responsibility.

If operating without a quiet cab or with the cab windows open always wear ear defenders.



P.T.O. DRIVE SHAFT SAFETY PRECAUTIONS

ON EACH TRACTOR CHECK:

All machines

Ensure the correct end of the driveshaft is fitted to the tractor. See labels on the drive shaft.

Check carefully that the drive shaft does not bottom out and that a minimum of 6" (150mm) of engagement is maintained.

Ensure that the guards are always in position, can rotate freely and the check chains are not stretched when the machine is raised or lowered.

Check that when in the continuous working position the drive shaft is not at an angle of more than 20 degrees to the P.T.O. centre line.

Ensure the drive shaft does not foul the tractor P.T.O. guard, the gearbox input shield or the tractor drawbar.

TRACTOR REQUIREMENTS

Linkage

Category II

P.T.O. shaft

Tractor must be equipped with a live drive P.T.O to enable forward motion to be stopped while the flail head continues to operate.

Check chains/stabilizers

Check chains or stabiliser bars must be fitted and tightened.

TRACTOR PREPARATION

Wheel width

Set wheel widths as wide as possible.

Ballast weight.

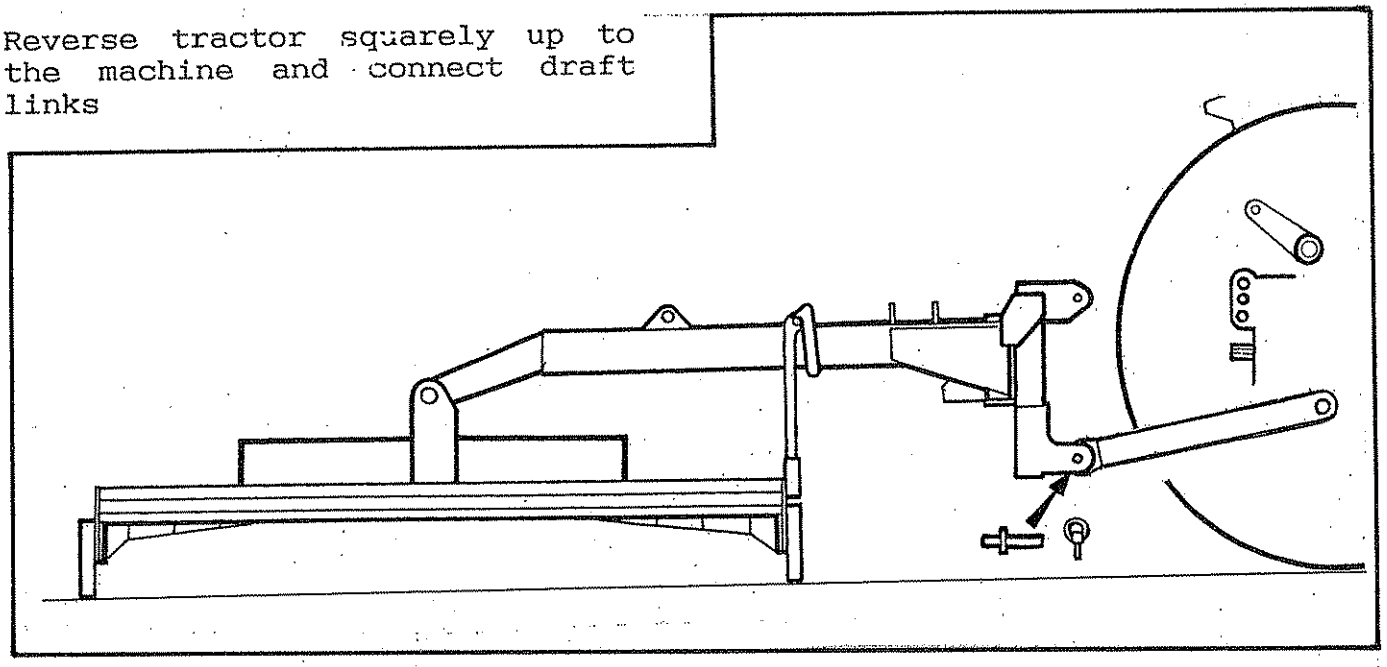
Add ballast weight whenever necessary within tractor manufacturers recommended limits to ensure stability under all working conditions.

ATTACHMENT TO TRACTOR

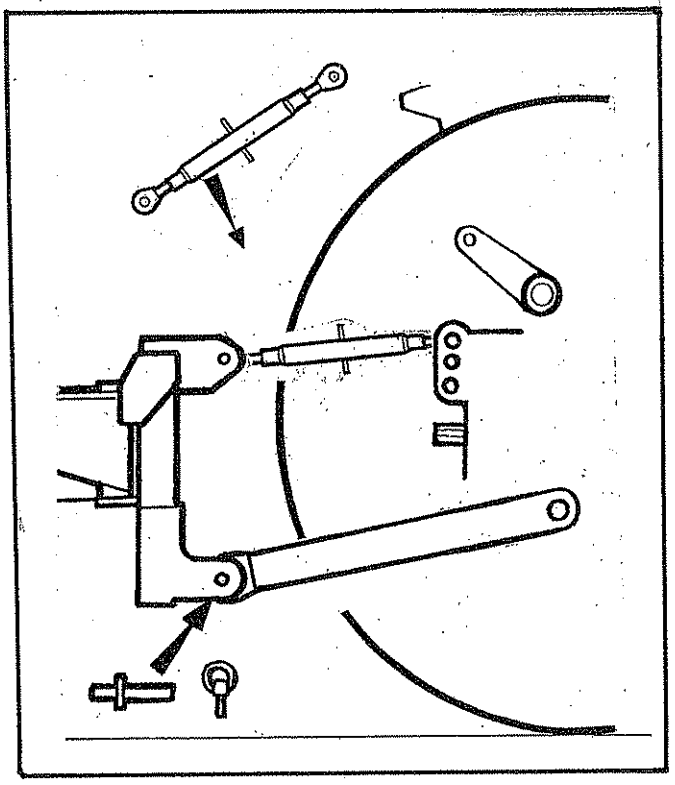
The machine will be delivered completely assembled with the arm and head to the rear in the transport position.

Choose a firm level site

Reverse tractor squarely up to the machine and connect draft links



Fit top link into position using highest available hole



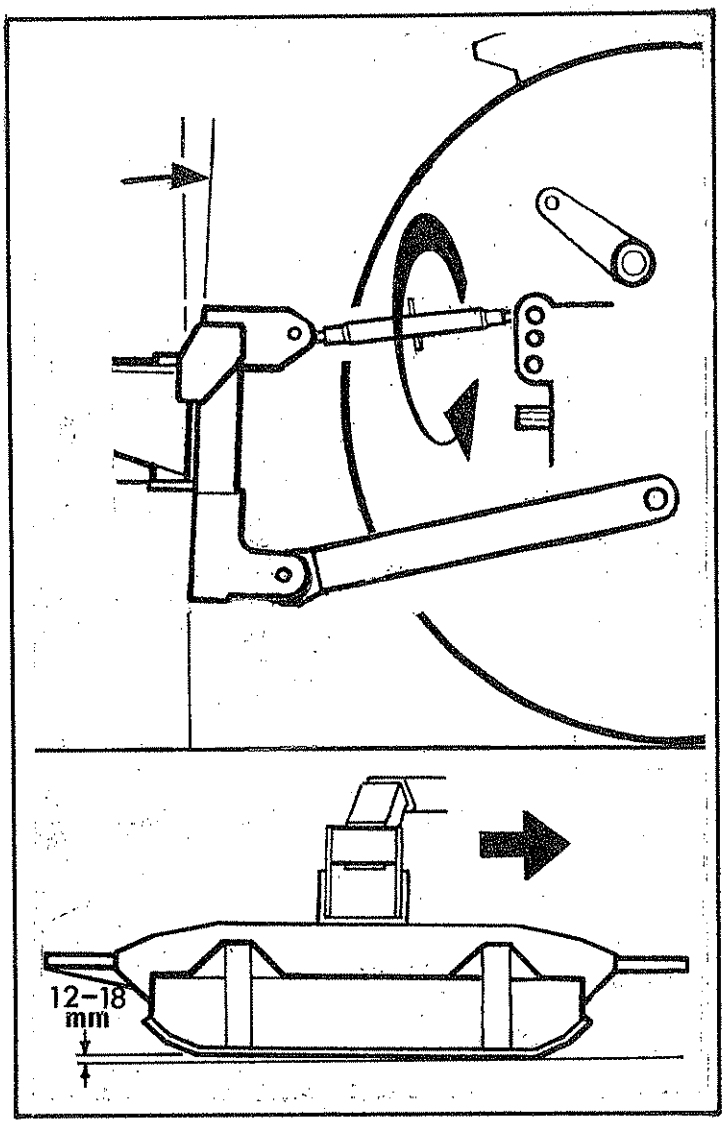
Connect supply and return hoses to a double acting auxiliary service connection on the tractor. Refer to tractors hand book for correct selection.

Pass the transport location plunger cord into the tractors cab.

Raise the machine on the tractors linkage until the head is just clear of the ground

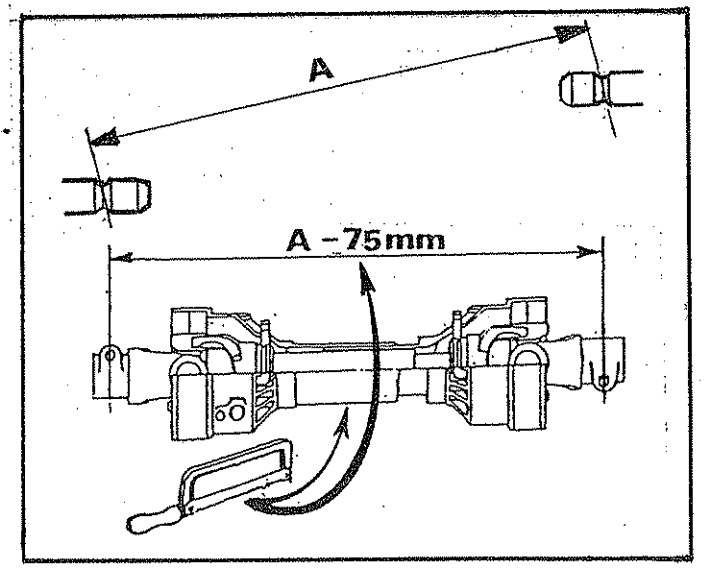
Pull the cord to release the position lock plunger and using the tractors auxiliary service slew the head into the work position. The cord may be released when the transport engagement indicator line becomes misaligned.

Adjust the tractors top link until the main frame is slightly tilted towards the tractor. This is to ensure that the head is carried with the leading cutting edge slightly lower i.e. 1/2" - 3/4" than the rear.

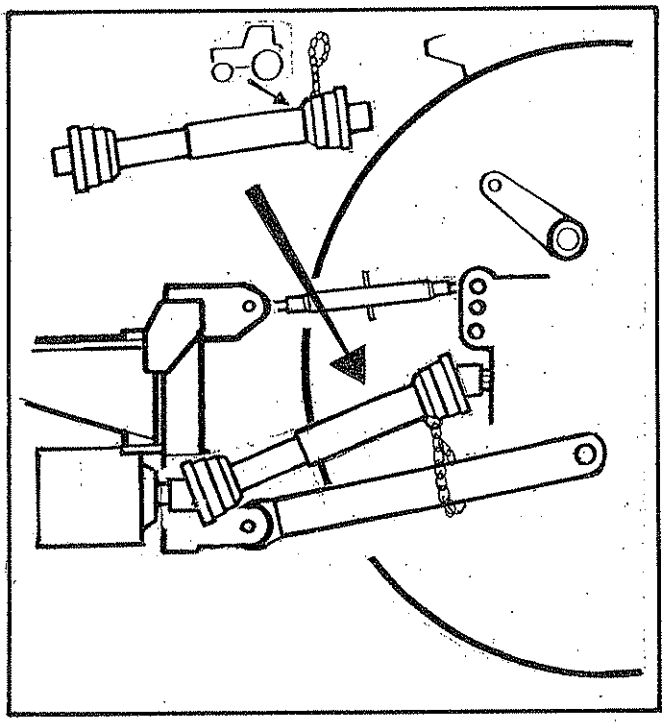


Adjust the tractors lift ram levelling box to bring the head horizontal.

Measure p.t.o. and cut to dimension shown. See maintenance section for details. Note:- for subsequent use on different tractors measure again. There must be a minimum of 150mm of shaft overlap



Fit p.t.o. shaft in position.. Attach torque chains to a convenient location to prevent shaft guards rotating



Pull the cord to release the position lock plunger and slew the machine into the transport position. Release the cord when the indicator line becomes misaligned to lock in place

Tighten check chains and/or stabiliser bars

Raise the machine on the tractors linkage to transport height.

The machine is now ready to proceed to the worksite

PRE-OPERATIONAL CHECKS

Check that:-

All nuts and bolts are tight and that blade bolts are torqued to 650Nm.

All blades are present.

Ensure blades are set at 90° *(see blade timing on page 21).*

Gearbox oil level is correct.

All guards are in position and in good condition.

OPERATION

PREPARATION

Read the book first

OPERATION

The machine maybe operated in two ways.

The head may be carried on the tractors linkage just clear of the ground. In this configuration the skids are not flattening any of the vegetation to be cut. However, the height of the cut is greater for the same skid settings and the head will always be carried at the same relative angle to the tractor and be thus unable to float and follow the ground contours.

The head maybe placed on the ground and the draft link arms lowered further. This will result in the stop bar rising up off the top of the main arm and allow the head to rock about its pivot as varying ground contours are engaged. In this instance the skids are in continuous contact with the ground and some deterioration of the quality of cut may occur in the skid tracks.

P.T.O. SPEED

The machine must be run at 540rpm P.T.O. speed.

DO NOT EXCEED THIS SPEED

P.T.O. SHAFT

The P.T.O. shaft is only engaged during actual work. In all other circumstances it must be disengaged and with rotation stopped.

RUNNING UP PROCEDURE

Ensure the machine is on the ground in the work position

Ensure nobody is standing near the machine

Start the tractor and allow to run at idle speed

Engage the P.T.O. drive

Gradually increase P.T.O. speed to the working revs. i.e. 540

RUNNING IN

During the first day of operation restrict the tractor's forward speed to approx. 3 miles per hour whilst maintaining the correct P.T.O. speed. This will allow the machine to 'bed in'.

During this period check bolts for tightness after 1 hour, 4 hours and at the end of the day.

TRACTOR FORWARD SPEED

Tractor forward speed will be determined by the type of work and the material to be cut.

Always drive at a speed which will allow the machine sufficient time to do its job properly.

Too fast a speed will be noticed initially in a deterioration of the cut finish and in extreme cases, by a falling off of rotor speed

HEIGHT OF CUT

Four different settings for heights of cut are available.

Position 1 — With the skids fully up and on the ground the height of cut is 1".

The remaining positions and heights are achieved by lowering the skids in 2" increments.

While it is possible to set the cutting height to one inch a minimum cutting height of three inches is recommended.

Cutting lower than this increases the likelihood of the blades contacting the ground causing shock loads to the machine which may cause damage to the cutter and drive.

It will also increase the power required to complete the cut causing increased fuel costs and in extreme cases cause damage to the driveline as the power required exceeds the limit of their design capacities.

It may also impede the mulch and spread of cut material as the sheer quantity of vegetation becomes too great for the machine to manage efficiently.

BREAKAWAY

The machine is fitted with a hydraulic breakaway device which protects the structure of the machine should an unforeseen obstacle be encountered.

Note:- **The breakaway function does not relieve the operator of his responsibility to drive carefully, be alert and to avoid obvious hazards before contact occurs.**

Breakaway may occur momentarily during normal work should an extra thick or dense patch of vegetation be encountered. In these instances tractor forward motion may be maintained with care.

Where breakaway has occurred as a result of contacting a post or tree etc. the tractor must be halted and the controls of the machine utilised to manoeuvre the head away from the obstacle. **NEVER CONTINUE FORWARD MOTION TO DRAG THE HEAD AROUND THE OBSTACLE IN BREAKBACK POSITION.**

Note:- The force required to activate the breakaway system will vary dependent upon the gradient of work. It will require less force when working uphill and vice versa.

Breakaway occurs at the main arm pivot and is limited to a maximum of thirty degrees. When an obstacle is encountered continual forward motion causes the pressure in the slew ram base to rise until accumulator pre-charge pressure setting is exceeded.

When this occurs oil is displaced from the slew ram base into a pressurised accumulator allowing the arm to pivot back horizontally and the obstacle to be cleared. Re-setting of the head into the work position occurs automatically as the pressurised accumulator vents itself back into the slew ram base.

GENERAL WORKING PRACTISES

It is the operator's responsibility to develop safe working procedures.

Always:-

Be aware of hazards in the vicinity.

Make sure **all** guards are in position and in good condition.

Disengage P.T.O. **before** stopping the engine.

Wait until the mower has stopped running **before** leaving the tractor seat.

Disengage the P.T.O. and **stop** the tractor engine **before** make any adjustments.

Check frequently that all nuts and bolts are tight.

Keep bystanders at a safe distance.

TRANSPORT

The machine is transported in line behind the tractor.

The transport height is a matter for the operator but generally it should be as low as practicable whilst ensuring the head will not contact the ground whatever the terrain conditions.

The acceptable speed of transport will vary greatly depending upon the ground conditions.

In any conditions avoid driving at a speed which causes exaggerated bouncing as this will put unnecessary strain on the tractors top hitch position.

WARNING

During transport the transport lock devices must always be used.

MOVING FROM WORK TO TRANSPORT POSITION

Disengage P.T.O. and wait until shaft has stopped rotating. If necessary raise the machine on the linkage until the head is clear of the ground. Pull the cord and release the position stop plunger.

Using the tractors auxiliary controls slew the arm rearwards into the transport position. The cord may be released When the work engagement indicator line becomes misaligned

Check that the plunger is fully engaged in the transport position.

Raise the machine on the tractors linkage until the desired transport height is achieved.

MOVING FROM TRANSPORT TO WORK POSITION

The above procedure is reversed.

REMOVAL FROM TRACTOR

Choose a firm level site

Lower mower head to the ground

Disconnect P.T.O. shaft

Remove position latch cord from the cab

Slacken check chains/stabiliser bars

Remove bottom hitch pins

Disconnect top link at machine end

Drive tractor away

STORAGE

Grease all grease points and any areas where paint has worn away

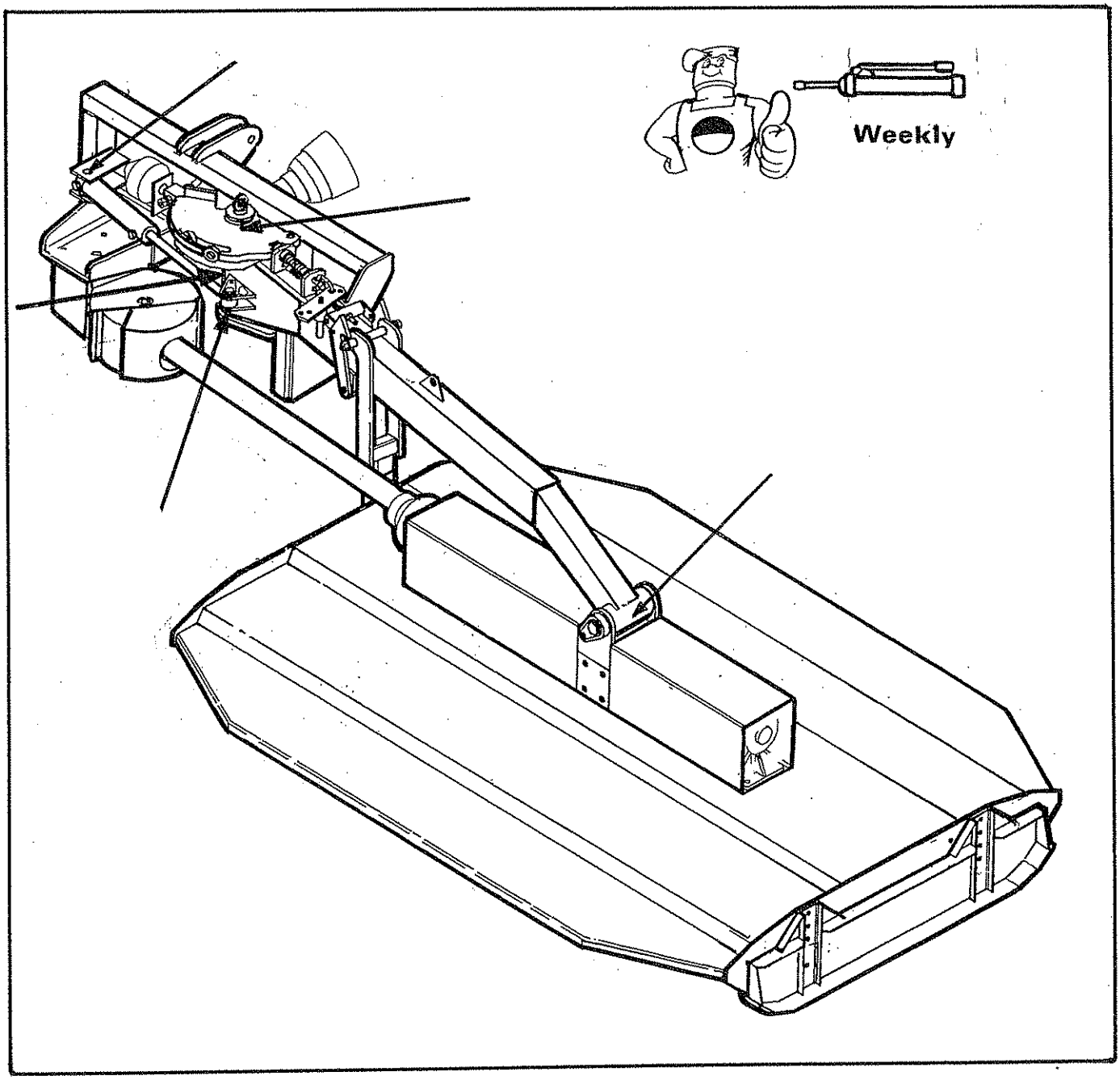
If machine is to be left standing for an extended period of time, lightly coat the exposed portion of the ram rod with grease. Subsequently this grease should be wiped off before the ram is next moved.

MAINTENANCE

Before carrying out any maintenance or adjustments ensure the P.T.O. is disengaged, the tractor engine is switched off and the blade has stopped rotating.

Should the work require the machine to be in a raised position always ensure that it is securely and independently supported. NEVER, NEVER, NEVER rely on the tractor's linkage when working beneath the machine.

LUBRICATION



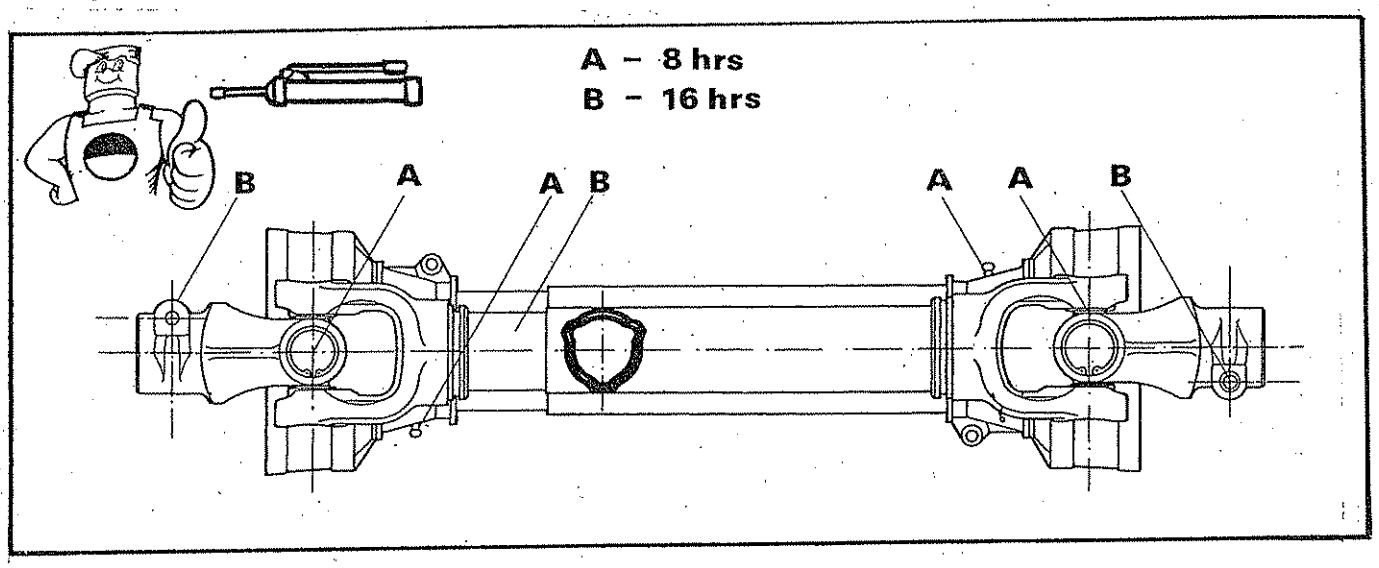
P.T.O. SHAFT

Regularly check the P.T.O. guards for damage and ensure the anti rotation chains are in place and that their anchor points are in good condition.

Do not operate the machine with any damage to guards, replace suspect items immediately.

Lubrication

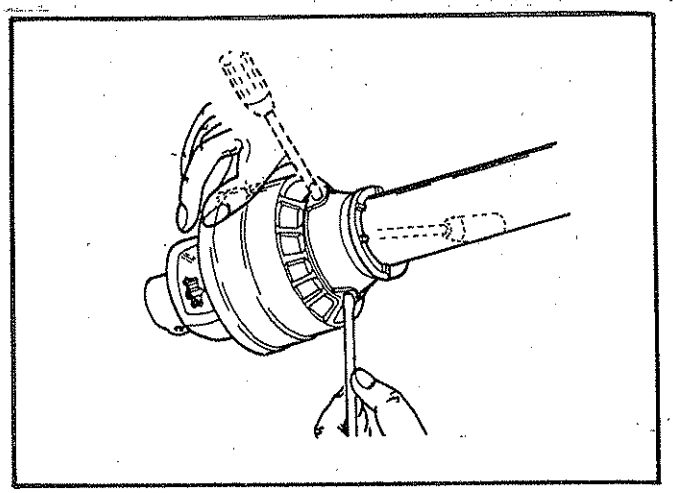
Lubricate the shaft at the points shown below at the intervals indicated using a general purpose lithium based grease.



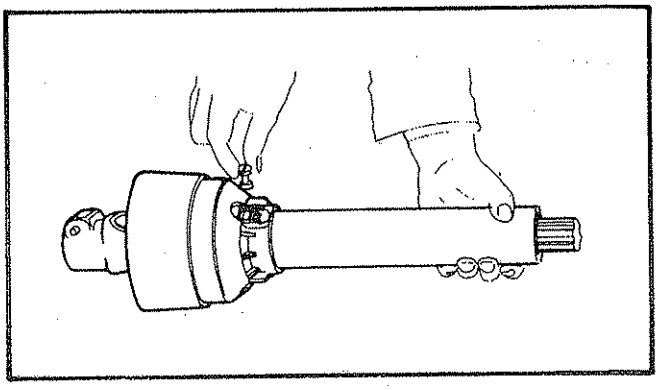
CUTTING P.T.O. SHAFT

Separate the two P.T.O. half shafts from one another.

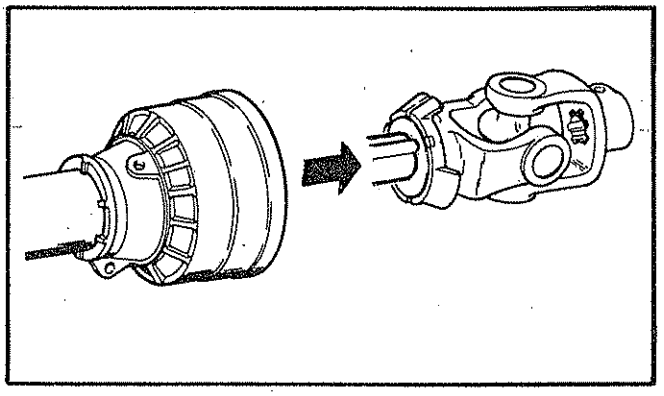
Turn the three guard fixing screws for each shaft half through 90°.



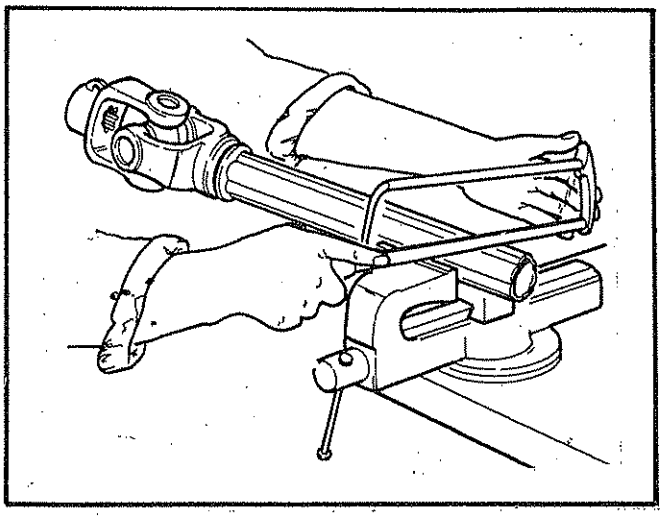
Extract the three screws for each shaft half.



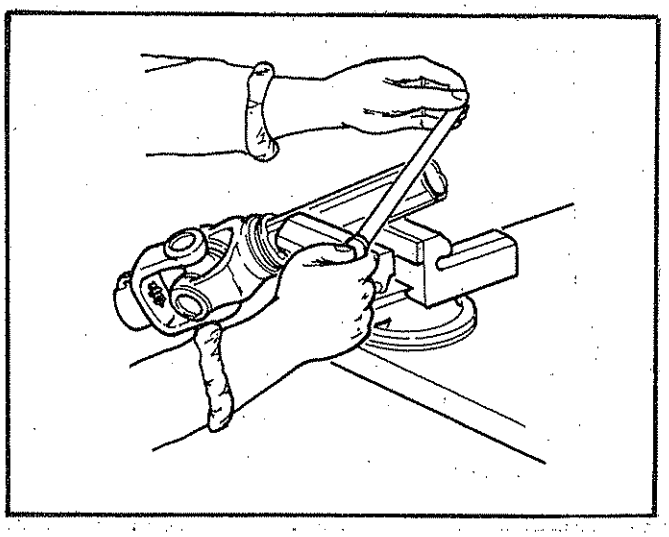
Separate the shafts from the guards/



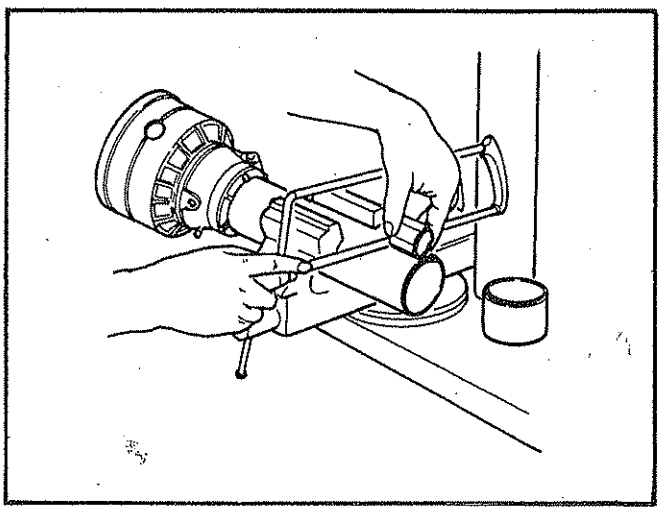
Cut the calculated shortening amount off both driver and driven shaft halves to give the required P.T.O. length.



De-burr the ends of the cut shafts.



Cut the same amount off both guard halves as cut off the shafts.



Slide the shafts into the guards. Refit the three screws, turn through 90° to secure and reassemble both shaft halves together

HYDRAULIC HOSES

The condition of all hoses should be carefully checked during routine service of the machine. Hoses that have been chafed or damaged on their outer casing should be securely wrapped with waterproof adhesive tape to stop the metal braid from rusting. Hoses that have suffered damage to the metal braid should be changed at the earliest opportunity.

HOSE REPLACEMENT

a. Replace one hose at a time to avoid the risk of wrong connections

b. When the hose is screwed to an additional fitting or union, use a second spanner on the union to avoid breaking both seals

c. Do not use jointing compound on the threads

d. Avoid twisting the hose. Adjust the hose line to ensure freedom from rubbing or trapping before tightening hose end connections.

All Hydraulic hoses now fitted to McConnel Mowers have "soft seal" connections on both flail and ram circuit hoses.

Recommended torque settings for nut security are as follows:-

M14 = 24 N.m or 18 lbf ft

For hose unions fitted in conjunction with bonded seals the recommended torque settings are as follows:-

M14 = 34 Nm or 25 lbf ft

SAFETY NOTE

Soft Seal hose connections are capable of holding pressure when the nut is only "finger tight". It is therefore recommended that when dismantling the hose is manually flexed, to relieve any residual pressure, with the retaining nut slackened prior to complete disassembly.

MOWER HEAD

Check daily that all bolts are tight and other fasteners are secure.

Check all blades for condition and replace when required.

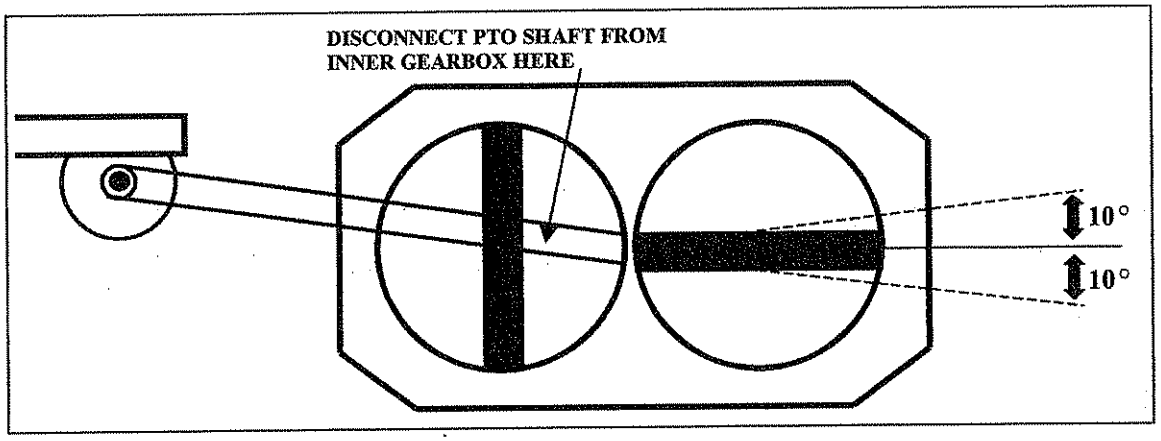
Blades should be replaced in complete sets or in pairs, and the blade timing checked. *(See below)*

Tighten blade bolts to 650Nm.

BLADE TIMING

The blade hubs must be timed at 90° ± 10° to avoid blades clashing when swinging back and forwards at the same time as rotating on their hubs.
The procedure to obtain the correct timing is as follows:

1. Before carrying out any maintenance or adjustments, ensure the PTO is disengaged, the tractor engine is switched off and the blades have stopped rotating.
2. Disconnect outer PTO shaft from the inner gearbox after removing covers.
3. Set blade hubs at 90° with inner blades pointing forwards and backwards and the outer blades pointing inwards and outwards *(as shown below).*



4. Re-connect the outer PTO shaft noting the direction of rotation it has to be turned.
5. The outer hub and blades will rotate some amount between 0° and 44°to achieve this, if the amount is more than 10° as shown in the diagram above, then the blades must be re-timed.
6. To move the blade hub closer to the desirable position, disconnect the outer PTO shaft from the inner gearbox as before, and rotate the shaft by 2 splines *(i.e. 120°)* this will rotate the hub and blades by 176° and thus the timing is brought closer to the optimum position by 4°.
7. If the initial timing of the blade is a long way out, i.e. 30°, the process can be quickened by turning the PTO one complete revolution, i.e. 6 splines, which will bring the hubs a step of 12° in the required direction. To avoid miscounting a spline, it is a good idea to mark the gearbox shaft and the PTO yoke with chalk or paint.

GEARBOX

Oil level is correct when level with the filler plug aperture. The gearbox oil should be changed every year or at 600 hour intervals *(whichever occurs first).*
Top up with EP90 oil.

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