

IM 1909
BUZZARD RANGE,
BUZZARD 6.5 – 6.5P
BUZZARD 7.25 – 7.25P – 7.25M
BUZZARD 8.0 – 8.0M

ARM MOWER
INSTRUCTION BOOK
ISSUE 4

IMPORTANT

NOTE HERE THE SERIAL NUMBER OF YOUR MACHINE AND ALWAYS QUOTE IT IN ANY COMMUNICATION WITH US OR YOUR DEALER. THIS IS PARTICULARLY IMPORTANT WHEN ORDERING SPARES. REMEMBER TO INCLUDE ALL NUMBERS AND LETTERS.

MACHINE SERIAL NUMBERS _____

THE INFORMATION GIVEN THROUGHOUT THIS MANUAL IS CORRECT AT THE TIME OF PUBLICATION. HOWEVER, IN THE COURSE OF CONSTANT DEVELOPMENT OF BOMFORD TURNER MACHINES, CHANGES IN SPECIFICATION ARE INEVITABLE. SHOULD YOU FIND THE INFORMATION GIVEN IN THIS BOOK TO BE AT VARIANCE WITH THE MACHINE IN YOUR POSSESSION, YOU ARE ADVISED TO CONTACT THE BOMFORD TURNER SERVICE DEPARTMENT WHERE UP-TO-DATE INFORMATION WILL BE PROVIDED.

THE MANUAL CAN CONTAIN STANDARD AND OPTIONAL FEATURES AND IS NOT TO BE USED AS A MACHINE SPECIFICATION.

THE MACHINE HAS BEEN TESTED AND IS CONSIDERED SAFE IF CAREFULLY USED ENSURE YOUR OPERATOR IS PROPERLY TRAINED IN ITS USE AND MAINTENANCE.

IMPORTANT

NOTEZ ICI LES NUMEROS DE SERIE DE VOTRE MACHINE ET MENTIONNEZ LES DANS TOUTE COMMUNICATION AVEC NOS SERVICES OU VOTRE REVENDEUR. CECI EST IMPORTANT POUR LA COMMANDE DE PIECES DETACHEES. PENSEZ A NOTER TOUS LES NUMEROS ET TOUTES LES LETTERS.

NUMEROS DE SERIE DE LA MACHINE _____

LES INFORMATIONS DONNEES DANS CE MANUEL SONT CORRECTES CEPENDANT, DU FAIT DE DEVELOPPEMENT CONSTANT DES MACHINES BOMFORD TURNER.

CHANGEMENTS DANS LES CARACTERISTIQUES SONT INEVITABLES.

SI VOUS TROUVEZ QUE LES INFORMATIONS DONNEES NE CORRESPONDENT PAS A VOTRE MACHINE VEUILLEZ CONTACTER LE SERVICE DES REPARATIONS OU DES INFORMATIONS PLUS RECENTES VOUS SERONT DONNEES.

CE MANUEL PEUT MONTRER DES CARACTERISTIQUES OPTIONNELLES ET NE PEUT PAS ETRE CONSIDERE COMME SPECIFICATION DE LA MACHINE.

CETTE MACHINE A ETE TESTEE, ET ELLE EST CONSIDEREE COMME FIABLE A CONDITION D'UNE BONNE UTILISATION. ASSUREZ-VOUS QUE VOTRE OPERATEUR EST QUALIFIE EN CE QUI CONCERNE L'UTILISATION DE LA MACHINE AINSI QUE SON ENTRETIEN.

WICHTIG

TRAGEN SIE HIER DIE SERIENNUMMERN IHRER MASCHINE EIN UND GEBEN SIE DIESE IMMER AN, WENN SIE SICH AN UNS ODER IHREN HÄNDLER WENDEN. DAS IST BESONDERS BEI ERSATZTEILBESTELLUNGEN WICHTIG. VERGESSEN SIE NICHT, ALLE ZAHLEN UND BUCHSTABEN ZU NOTIEREN.

SERIENNUMMERN DER MASCHINE _____

DIE ANGABEN INDIESEM HANDBUCH SIND BEI VERÖFFENTLICHUNG KORREKT. AUFGRUND DER KONSTANTEN WEITERENTWICKLUNG VON BOMFORD TURNER MASCHINEN SIND JEDOCHÄNDERUGDEN IN DER SPEZIFIKATION UNVERMEIDLICH. WENN DIE INFORMATION IN DIESEM HANDBUCH NICHT MIT IHRER MASCHINE ÜBEREINSTIMMEN, NEHMEN SIE BITTE KONTAKT MIT DER BOMFORD TURNER KUNDENDIENSTABTEILUNG AUF, DIE IHNEN GERNE DIE AKTUELLEN INFORMATION ZUKOMMEN LÄSST.

DAS HANDBUCH KANN SOWOHL BESCHREIBUNGEN FÜR DIE STANDARD AUSFÜHRUNG ALS AUCH FÜR ZUBEHÖR ENTHALTEN UND IST NICHT ALS MASCHINENSPEZIFIKATION ZU VERWENDET.

DIE MASCHINE IST GETESTET UND BEI SACHGEMÄSSEM BETRIEB ALS SICHER BEFUNDEN WORDEN. SORGEN SIE DAFÜR, DASS IHR BEDIENPERSONAL IN ANWENDUNG UND WARTUNG RICHTIG GESCHULT WIRD.

This manual covers the Buzzard range of Flail Mowing machines that are hydraulically powered and are designed for vegetation control. They are mounted to the tractor's rear axle using suitable brackets.

The Buzzard 6.25, 7.25 and 8.0 are two arm machines with a telescopic second arm for additional reach and the 7.25M and 8.0M have a third arm and intermediate beam giving the machine "forward reach" capabilities.

The machinery is designed for the cutting and thinning of all types of hedges and verges within the scope of its reach and performance, provided the correct guards are fitted.

This manual should be read in conjunction with the tractor operator's manual. It is essential that these Manuals are read and fully understood before operating the machine. It is essential that the machine is operated in line with the procedures and practices detailed in this manual.

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NOTE:

Diagrams may show left or right hand build machines, in either case the same text applies. If in any doubt consult Bomford Turner Limited.

IMPORTANT

This machine is designed for vegetation control and must not be used for any other purpose.

It is potentially hazardous to fit parts other than genuine **Bomford Turner** manufactured parts.

The company disclaims all liability for the consequences of such use that will in addition, void the machine warranty.

EC DECLARATION OF CONFORMITY
Conforming to EU Directive 2006/42/EC

We,

Of BOMFORD TURNER LIMITED, Station Road, Salford Priors, Evesham, Worcestershire, WR11 8SW, UK.

Declare that under our sole responsibility the product (type);

Reach arm base unit	Product code
BUZZARD 6.5	BZ6S & BZ6P
BUZZARD 7.25	BZ7S & BZ7P
BUZZARD 8.0	BZ8S

A tractor mounted hedgecutter / grass mower, to be fitted with one of the following flail mower cutting attachments;

Reach arm attachment	Product code
1.2M PRO-CUT CUTTING HEAD	12PC
1.5M PRO-CUT CUTTING HEAD	15PC
1.2 PRO-CUT ISMP CUTTING HEAD	12PC

Serial No(s) & Date:.....

Designed by: BOMFORD TURNER LTD, Salford Priors, Evesham, Worcestershire, WR11 8SW, UK.

Manufactured by: ALAMO MANUFACTURING SERVICES (UK) Limited, Station Road, Salford Priors, Evesham, Worcestershire, WR11 8SW, UK.

Complies with the required provisions of;

- Directive 2006/42/EC
- Directive 2004/108/EC
- EN ISO 12100:2010

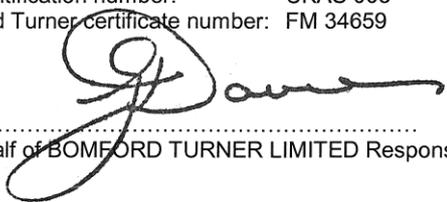
And other national standards associated with its design and construction as listed in the technical file.

BOMFORD TURNER LIMITED operates an ISO 9001:2008 quality management system.
This system is accredited by;

BSI, Beech House, Linford Wood, Milton Keynes, UK, MK14 6ES

BSI identification number: UKAS 003

Bomford Turner certificate number: FM 34659

Signed.....


On behalf of BOMFORD TURNER LIMITED Responsible person

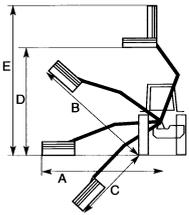
Status: Managing Director

Date: 02/01/2010

MACHINE MODEL

TRACTOR REQUIREMENTS	6.5	6.5P	7.25	7.25P	7.25M	8.0	8.0M
PTO type-	Live						
PTO speed (rpm.)	540	540	540	540	540	540	540
PTO size	1 3/8in, 6 spline						
Minimum tractor weight without ballast	4000kg	4000kg	4200kg	4200kg	4200kg	4500kg	4500kg
Minimum tractor hp	80	80	90	90	90	100	100
MACHINE WEIGHT							
Base -dry	1630kg	1650kg	1660kg	1680kg	1710kg	1960kg	1990kg
with oil	1870kg	1890kg	1900kg	1920kg	1950kg	2200kg	2230kg
Head (Pro-Cut 1200)	290kg						
Complete Machine Including oil	2160kg	2180kg	2190kg	2210kg	2240kg	2490kg	2520kg
Oil tank capacity	250 litres						

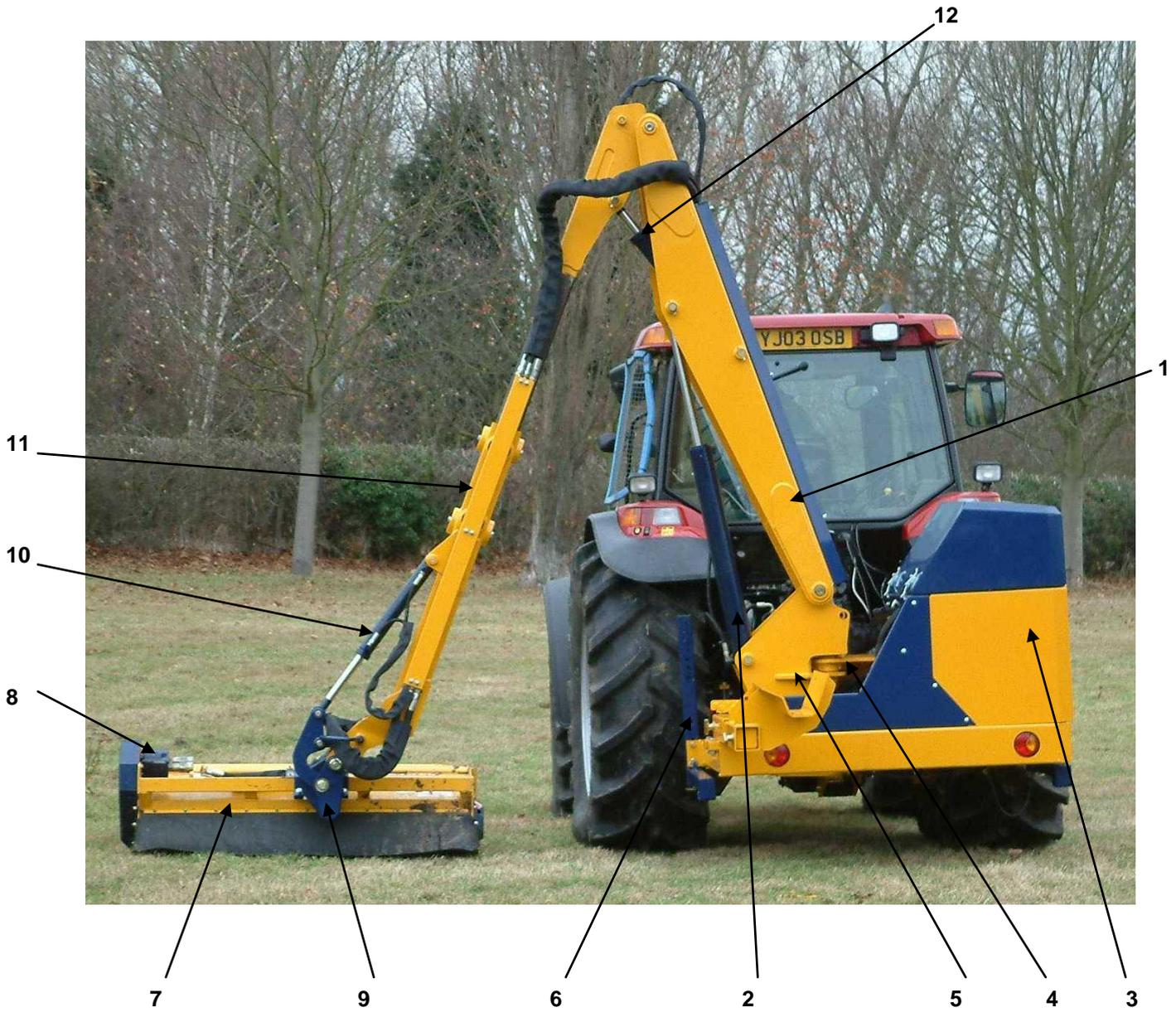
DIMENSIONS (with 1.2m Pro-Cut Head)



	6.50m	6.50m	7.25m	7.25m	7.25m	8.00m	8.00m
A	6.50m	6.50m	7.25m	7.25m	7.25m	8.00m	8.00m
B	6.65m	6.65m	7.40m	7.40m	7.40m	8.15m	8.15m
C	4.85m	4.80m	5.60m	5.55m	5.40m	6.20m	6.25m
D	5.80m	5.80m	6.80m	6.80m	6.80m	7.30m	7.20m
E	7.65m	7.55m	8.45m	8.35m	8.45m	9.20m	9.20m

CUTTING UNITS – PRO-CUT

	1.2/ISMP	1.5
Shaft speed (Nominal) (Dependant on pulley orientation)	3000 (2485) rev/min	3000 (2485) rev/min
Flail type & quantity:		
Proflail	32	40
Twin	64	80
Heavy single	32	40
Tee 40	32	40
Tee 60	32	40
Bushmaster	24	



Telescopic Arm Machine Illustrated

- | | | | |
|-----|----------------------|-----|------------------|
| 1. | First Arm | 2. | First Ram |
| 3. | Oil Tank | 4. | Slew Ram |
| 5. | Kingpost | 6. | Stand |
| 7. | Cutting Head | 8. | Motor |
| 9. | Head Angling Bracket | 10. | Head Angling Ram |
| 11. | Second Arm | 12. | Second Ram |

1 Safety

Read, Understand and Follow the Safety Messages. Serious injury or death may occur unless care is taken to follow the warnings and instructions given in the safety messages,

CAUTION! The lowest level of Safety Message; warns of possible injury.

WARNING! Serious injury or possible death.

DANGER! Imminent death/critical injury.

Never operate the tractor or machinery until you have read and completely understand this manual and the tractor operators manual and each of the safety messages found in the manuals and those displayed on the tractor and implement.

DANGER! DO NOT attempt any maintenance of or adjustment to the machine while it is running. Before carrying out any work on the machine follow the three safety instructions below:

- a LOWER THE CUTTING HEAD ON TO THE GROUND
- b PUT THE PTO OUT OF GEAR
- c STOP THE TRACTOR ENGINE

DANGER! At all times ensure that the PTO shaft guard is in position, securely fitted and in good condition and that the tractor PTO shaft shield is fitted.

CAUTION! Replace the PTO shaft guard if any of the following are evident:- guard cracked or damaged any part of the PTO shaft exposed. Ensure the PTO shaft guard is free to rotate and the anti-rotation chains are securely fitted and effective.

WARNING! Ensure that the correct guards are properly fitted to the machine and tractor at all times and that they are in good condition. Refer to section on Guards and Rotation in this manual to ensure you have the correct guards fitted for the type of operation being performed.

WARNING! While the tractor is running all personnel should keep well clear of the area around the machine as there are numerous crushing, shearing, impact dangers caused by the machine operation.

DANGER! **AVOID WIRE.** It can be extremely dangerous if wire catches in the rotor, and every care must be taken to ensure this will not happen. Inspect the working area before commencing. Remove all loose wire and obstructions and clearly mark those that are fixed so that you can avoid them. Any unusual noise from the cutting unit area indicates that the rotor shaft may have been fouled by an obstruction. A visual indication that wire is in contact with the flails may be a sudden movement of the vegetation ahead of the cutting unit. In any such event STOP the tractor engine INSTANTLY. On no account move the cutting unit until the rotor has completely stopped. NEVER IN ANY CIRCUMSTANCES run the rotor to 'clear itself'. When the rotor has stopped inspect it and remove any obstruction that may be present. If working under a raised machine ensure that it is safely supported. Before working on the rotor always stop the tractor engine.

DANGER! Flail mowers are capable under adverse conditions of throwing objects great distances at high velocity. CHECK the flails for wear and the attachment bolts for tightness every day during work .A few moments whenever the machine is stopped, e.g. whenever removing obstructions, will help reduce flail wear or loss.

- DANGER!** Keep your forward speed to a level appropriate to the operating conditions. High-speed manoeuvres with the arms stretched out are very dangerous, particularly on uneven ground where there is risk of overturning.
- WARNING!** Direct the cut material away from the tractor. It is important that while operating the cut material is not directed towards the operator. Avoid positioning the cutting head so that the underside is angled towards the cab.
- DANGER!** Keep a careful watch for passers by who may inadvertently get in the way of cut material being thrown from the cutting unit. Flail mowers are capable under adverse conditions of throwing objects great distances at high velocity. Stop the rotor shaft until all people are well clear.
- WARNING!** Extreme care should be taken when operating near loose objects such as gravel, rocks, wire, and other debris. Inspect the area before mowing. Foreign objects should be removed from the site to prevent machine damage and/or bodily injury or even death. Any objects that cannot be removed must be clearly marked and carefully avoided by the operator. Stop mowing immediately if flails strike a foreign object. Repair all damage and make certain the rotor shaft is still balanced before resuming cutting operations.
- WARNING!** Transport the machine only at safe speeds. Serious accidents and injuries can result from operating this equipment at unsafe speeds
- DANGER!** Do not operate or transport with the arms extended rearwards as instability will result and also the possibility of overturning
- CAUTION!** Keep the roller in position at all times. It is an essential part of the machines guarding. The machine must not be operated with the roller missing.
- DANGER!** A wire mesh cab guard must be fitted on the outside of the cab window, between the operator and the cutting head, in such a position as to give the operator maximum protection.
- DANGER!** Where a hedge trimmer is used in conjunction with tractors not fitted with a glazed safety cab, a clear polycarbonate safety screen together with a mesh guard must be fitted to the tractor between the operator and the cutting head. A polycarbonate safety screen must be used on cabs where windows are likely to be left open for ventilation purposes. We emphasise that cab windows on the operating side through which the cutting head is observed **MUST** be intact, clean and closed, or a clear polycarbonate safety screen must be fitted where hedge cutting and trimming operations are carried out. A mesh guard must also be fitted when hedge cutting.

2 Noise

The equivalent daily personal noise exposure from this machine, measured at the operator's ear, is within the range of 80-85dB when used in conditions where the load fluctuates between zero and maximum. This applies when the machine is attached to a tractor fitted with a quiet cab and used in accordance with the operating instructions in a generally open environment. At equivalent daily noise exposure levels of between 85 and 90dB, suitable ear protectors are recommended.

3 Emergency Stop

To stop the rotor in an emergency use the tractor stop control. The use of the tractor stop control must only be done in an emergency. Its use to stop the rotor can cause damage to the hydraulic components. After an emergency stop of the rotor; ensure that the PTO lever and rotor control is set to **OFF** before restarting the tractor.

4. Reverse Rotation

The term REVERSE rotation in the following notes indicates the direction of the rotation of the rotor shaft in relation to the tractor wheels, assuming that the tractor is moving in a forward direction.

5. Grass and Hedge Trimming

- a The standard build for **hedge trimming** is REVERSE rotation with the steel guard and wire trap at the front of the cutting unit.
- b The standard build for **grass cutting** is REVERSE rotation with the flexible flap guard fitted at the front of the cutting unit.
- c See Section 12 for detailed guarding instructions.

6. Safety Decals

Safety decals are located on various points of the machine. They can be identified by the yellow upper panel depicting the hazard, and the lower white panel indicating means of avoidance or precautions to be taken. These decals have no text. It is essential that all operators and personnel associated with the machine fully understand their meanings, which are shown on the following pages.

Any safety decals which are found missing should be replaced.

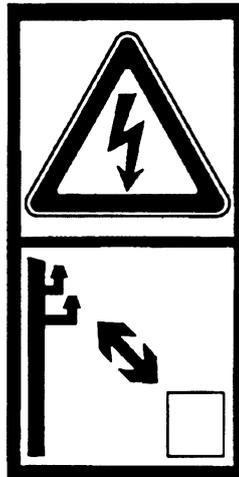


7. Electromagnetic Compatibility (EMC) - Radio Telephones

Machines fitted with electric controls are subject to EU directives. The use of radiotelephone equipment should not affect their performance. Ensure that the telephone is installed correctly. Check that no unexpected movements of the machine occur when the telephone is used to transmit.



READ INSTRUCTION MANUAL BEFORE STARTING WORK



DANGER OF ELECTRIC SHOCK. STAY CLEAR OF CABLES



DO NOT WORK OR STAND UNDER AN UNSUPPORTED MACHINE



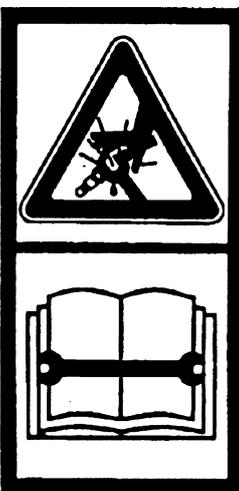
DANGER FROM THROWN DEBRIS. KEEP ALL PERSONNEL AT A SAFE DISTANCE FROM THE MACHINE WHEN WORKING



DANGER ROTATING MACHINERY STAY CLEAR OF OPERATING MACHINE

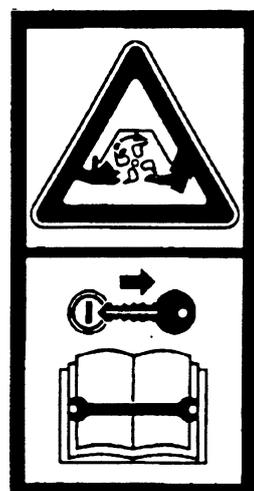


DANGER OF CRUSHING STAY CLEAR OF ZONES



RESIDUAL PRESSURE IN HYDRAULIC LINES READ INSTRUCTION BOOK BEFORE ATTEMPTING MAINTENANCE

STOP TRACTOR AND REMOVE KEY BEFORE UNBLOCKING OR ATTEMPTING MAINTENANCE ON THE HEAD





HOT SURFACE DO NOT TOUCH



KEEP ALL NUTS AND BOLTS TIGHT



WARNING! ARMS MAY HIT CAB IF CLEARANCE IS NOT SUFFICIENT



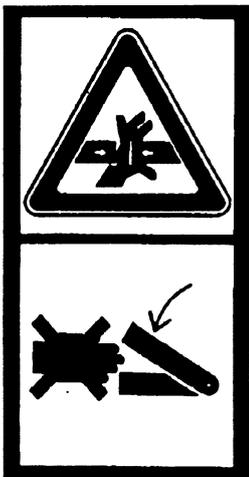
WARNING! ARMS MAY HIT CAB IF CLEARANCE IS NOT SUFFICIENT



DANGER OF CRUSHING STAY CLEAR OF ZONES



DANGER OF ENTANGLEMENT IN SHAFT. KEEP ALL PERSONNEL CLEAR WHILE TRACTOR IS RUNNING



PINCH POINT. KEEP CLEAR WHILE TRACTOR IS RUNNING

1 TRACTOR REQUIREMENTS

Before preparing the tractor for the machine ensure that it meets the specification requirements in Section 2 and also those listed below.

- a 6 spline PTO of 1.3/8in dia.
- b A PTO output of 540 rev/min.
- c A top link should be available.
- d Adequate ballast should be added to the rear wheel opposite to the arms and front of the tractor to ensure stability. The amount will vary depending on type of tractor used and prevailing conditions.

IF IN DOUBT FOR YOUR MACHINE/TRACTOR COMBINATION, CONTACT BOMFORD TURNER CUSTOMER SERVICE DEPARTMENT.

2 MACHINE PREPARATION

The machine will normally be delivered with the arms fully assembled to the mainframe, but with the cutting head detached. A shipping stay is fitted to prevent movement of the arms and this will need to be removed before fitting the cutting head. Details of the shipping stays for forward reach machines are illustrated on the next page.

The lifting points (indicated with arrows) are for machines without the cutting head attached. Due to the fact that machine may be supplied with or without a tank full of oil there are several lifting points. Ensure the correct points are used to suit the machine's condition, as the centre of gravity changes with or without oil; exercise caution.

CAUTION Only personnel experienced in lift and hoist operation should be involved in lifting machines.



SHIPPING STAY



SHIPPING STAY



SHIPPING STAY

SHIPPING STAYS – FORWARD REACH MACHINES

LIFTING POINTS



1 MACHINE TO TRACTOR ATTACHMENT POINTS

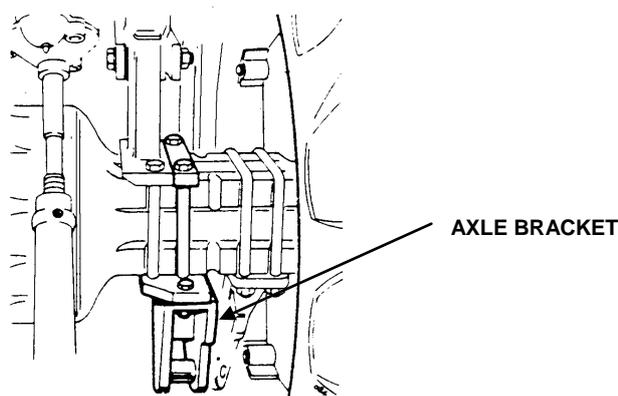
The machine is attached to the rear of the tractor at three points: by two brackets mounted on the tractor axle and by a mounting yoke connected to the tractor drop links.

2 TRACTOR AXLE BRACKETS

The illustration below shows typical axle brackets fitted to New Holland type tractors. Some tractors may have brackets of different design fitted below or to the rear of the axle.

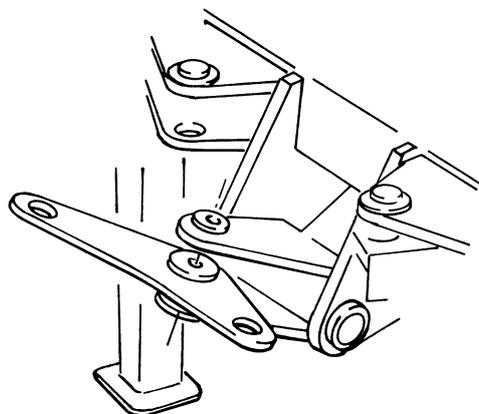
As the axle brackets vary for each make and model of tractor it is necessary to follow the correct fitting instructions for the tractor concerned. Therefore instructions for installing the brackets, incorporating a complete parts checklist are supplied with the brackets as a separate booklet from this manual. These should be read in conjunction with the instructions given below.

IMPORTANT THE AXLE BRACKETS MUST BE FITTED IN ACCORDANCE WITH THE INSTRUCTIONS, (SUPPLIED SEPARATELY) FOR THE RELIVANT TRACTOR. PARTICULAR CARE SHOULD BE TAKEN WHEN THE BRACKETS UTILIZE THE SAFETY CAB MOUNTINGS



3 MOUNTING YOKE

The illustration opposite shows a typical New Holland mounting yoke fitted to the mainframe. Mounting yokes may vary for different tractors, but all are fitted to the mainframe as illustrated.



4 MACHINE PREPARATION

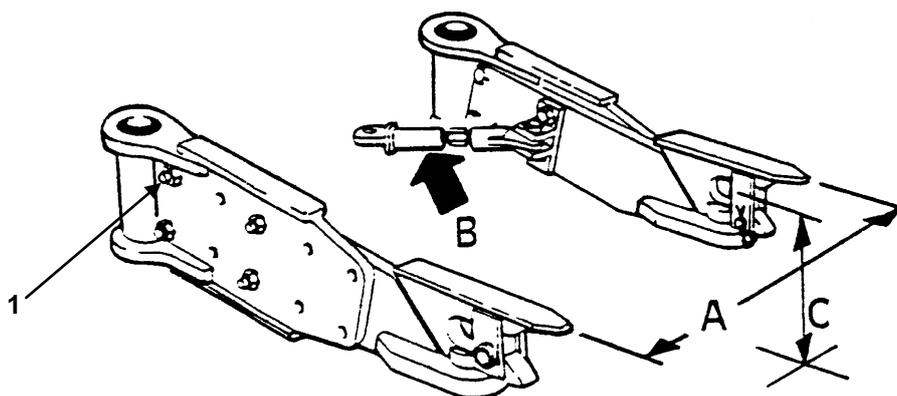
Position the machine on a flat hard surface. Detach the axle forks from their transport position and fit them to the pivot gates using 4 off 20mm bolts and nuts (1) each side. The length of the assembled forks and the position of the tie rod mountings will depend on the tractor to which the machine is fitted.

4 FITTING MACHINE TO TRACTOR

To fit the machine to the tractor follow the instructions carefully, referring to the illustrations for guidance.

MOUNTING FORK WIDTH

- a Measure the distance between the axle brackets on the tractor (dimension A).
- b Set the mounting forks to this dimension (A), making sure that they are equidistant from the sides of the mainframe. (See illustration below)
- c Lock ONE of the mounting forks in position using the tie rod (B) between the fork and the mainframe.



MOUNTING FORK HEIGHT

- a Measure height to centre of mounting fork jaw, dimension (C).
- b Compare this height with the height of the axle bracket pivot on the tractor.
- c If the forks are too high adjust the height of the mower on the stands to obtain the correct height.

6 ATTACHING TO TRACTOR

- a Remove mounting fork jaw retainers and lift the machine using transport lift point, until the mounting forks are in line with the axle brackets.
- b Carefully reverse tractor until axle bracket pivots just start to enter the mounting fork jaws by equal amounts. If not equal, refitting of the mounting fork jaw retainers will be difficult.

DANGER! Do not allow personnel between machine and tractor. Danger of crushing.

- c On some tractors it may not be possible to fit the PTO shaft after the machine is fitted; if so. stop tractor when forks are 70-80mm short of full engagement.
- d Fit the PTO shaft to drive shaft at rear of tractor and to the machine.

IMPORTANT IT MAY BE NECESSARY IN SOME CASES TO SHORTEN THE DRIVE TUBES OF THE PTO SHAFT: FIRST TRY THE SHAFT WITHOUT THE GUARD, SHORTEN TO SUIT AND THEN SHORTEN THE GUARD TO FIT THE PTO (see notes below about minimum engagement).

- e Gradually reverse tractor until full engagement of fork is achieved.
- f Lock forks in position using jaw retainers pins and spring cotters.
- g Attach PTO guard check chains to the holes provided in the PTO guards on the tractor and machine.
- h Lock the remaining tie rod in position.
- i Operate the lift arm hydraulics and lower the drop arms to their lowest position.
- j Attach the ends of the drop arms to the mounting yoke on the mainframe.
- k Adjust their length manually to centrally position the mounting yoke on the mainframe.

IMPORTANT WHEN OPERATING THE MACHINE ENSURE THAT THE DROP ARMS ARE AT THEIR LOWEST POSITION AND THAT THE TRACTOR HYDRAULICS ARE UNLOADED.

- l Adjust drop arm length to leave the rear face of the tank vertical with the drop arms in their fully lowered position.
- m Remove the remaining items of the transport pack from the machine These items are identified by some red paint.
- n Stow the parking stands in their transport position.. Lock in position using the linch pins supplied.

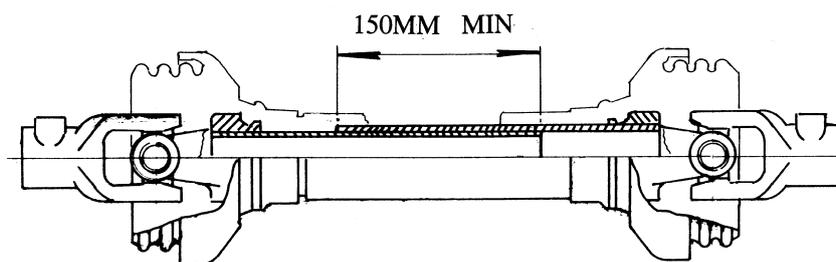
IMPORTANT THE PTO SHAFT MUST NOT BE OPERATED AND THE PUMPS RUN UNTIL THE TANK IS FILLED WITH THE CORRECT BRAND/GRADE OF OIL. (See Section 8) SERIOUS DAMAGE MAY OCCUR.

7 FITTING PTO

Before fitting PTO shaft to tractor, grease the sliding drive shafts and bearing units.

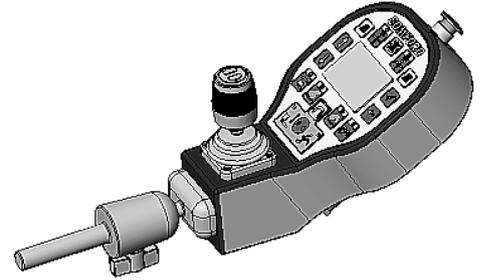
IMPORTANT MINIMUM ENGAGEMENT OF PTO IS 150MM IN THE WORKING POSITION. THIS MEASUREMENT MUST BE TAKEN INTO ACCOUNT WHEN SHORTENING THE PTO SHAFT

- a Fit PTO to tractor ensuring locking peg on the splined coupling is fully engaged.
- b Attach PTO guard check chains to tractor and machine.



ELECTRONIC CONTROL SYSTEM

The Bomford ICS (intelligent control system) is fitted and comprises a joystick and switch console for mounting in the tractor cab and an ECU (electronic control unit) installed on the machine positioned under the tank lid.



ICS Control Unit

The unit has a monolever joystick which provides proportional control to the first arm, second arm, head angling, slew and telescopic arms.

Additional touch buttons are provided for cutting unit controls, head float and arm float.

Other functions such as breakout-reset lockout and cutting head turntable are applicable to certain machines in the Bomford range.

A liquid crystal display (LCD) screen displays job time hours, faults, error messages and other warnings. For example should a fault occur with the wiring an error message/warning will flash on the screen.

Fitting ICS Control Unit

The controller is supplied separately and the position of the unit inside the cab depends largely upon the preference of the operator. A socket is provided on the base of the unit to enable the connection of the control lead from the ECU. Care should be taken when mounting the unit not to drill holes through structural members of the safety cab.

Electrical Connections

- Fit the power lead from the ECU box to the tractor. It is recommended that this be fitted direct to a battery terminal to avoid overloading the tractor circuits. Two 30 amp fuses in the power lead protect the ECU box. (Fuse part no. 43034.03)
- The power lead is 5 metres long. The brown lead must be fitted to the live 'L' terminal and the blue to the neutral 'N' terminal.
- Connect the control lead from the ECU box to the ICS controller, taking care to line up the mating connections without force. The cable may be fed through an open cab window or suitable aperture in the rear of the cab. Take care to avoid sharp edges which may damage the cable. Do not trap the cable when closing cab windows.

WARNING Once the machine is fitted to the tractor and the power connected, it may be possible to slew the arms to hit the cab. Serious injury or damage could occur. The slewing operation must be practised with care to ensure safe operation.

CONTROL UNIT OPERATION

Access the menu's on the ICS by pressing the accept/enter menu's key



Scroll through the menu with the up and down keys and select machine settings. Set each function as required by pressing accept/enter key. (See page 7 – 3)



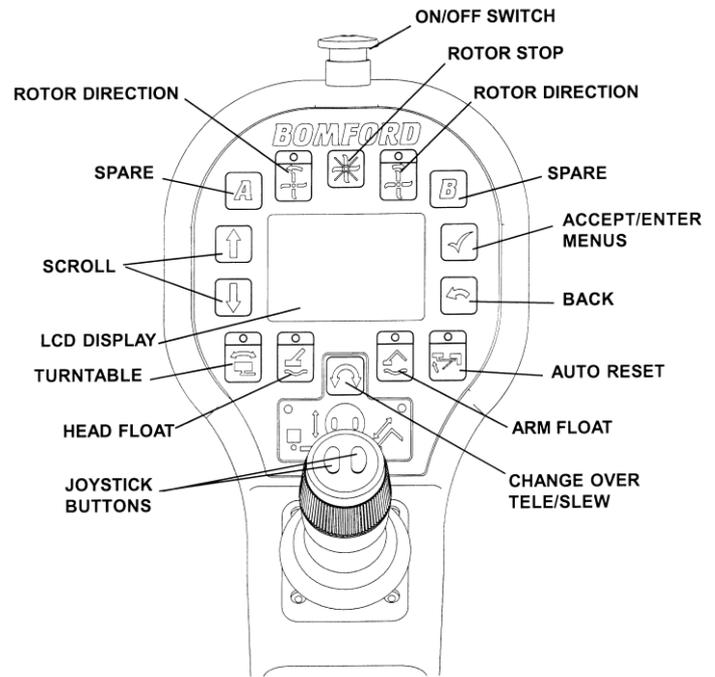
Return to main screen by pressing Back key and check operation of machine.



On/Off Switch – Depress to switch off all operations. Twist and release to switch On. Always switch off when the machine is not in use.

First and Second Arm. The joystick enables either separate or combined movement of both arms. The controls are proportional in action; the further the joystick is moved the faster the corresponding service responds. By moving the joystick such that both services operate together it is possible with a little practice to move the cutting head in a very precise manner, in and out or up and down on command.

Head Angling. Twist the knurled bezel on the joystick to alter the angle of the cutting head.



Slew and Telescopic Arm Operation – Both operations are controlled by the joystick buttons. Depress the change over button to select the function required which will be indicated by an LED (light emitting diode) indicator.



Head Float. To select Head Float depress the head float button; an LED will illuminate. Should the head angling control (knurled bezel) be turned head float will be cancelled. When the joystick bezel returns to the neutral position head float will resume.



Rotor Start, and Reverse. Depress the appropriate “Rotor Start” button to start the rotor in required direction. An LED will illuminate.



DANGER! Direction of Rotation must only be selected according to the correct guarding.(See Section 12 Guards & Rotation.)

Rotor Stop – To stop the rotor depress the “Rotor Stop” button. It is not possible to reverse the rotor until the LED’s on the rotor start buttons stop flashing (after approximately 8 seconds).



Caution. Do not reverse rotor to clear obstructions.

Turntable (When fitted) To operate Power Turntable press Turntable button; an LED will illuminate. Rotate joystick bezel to operate the turntable.



Auto Reset. Breakout. (When fitted) When selected the breakout will not reset when the first arm is lifted. You may lift and lower first arm in any slewed position without breakout re-setting. An LED will illuminate when selected.



Arm Float (When fitted) When selected will allow the first arm to float and should always be used for grass cutting on undulating ground. An LED will illuminate when arm float is selected. To lift cutting head over an obstacle move the joystick to lift the head; arm float will be switched off but the LED will still be illuminated.



When the obstacle is cleared push the joystick to lower the head; arm float will re-engage.

Caution. Arm float must be switched OFF when transporting the machine.

CONTROL UNIT SETTINGS

Switch the system on with the Red On/Off button.



A **Welcome** screen will be displayed;



You can then swap between;

- Job Time
- Total Time
- PTO Speed Sensor (when fitted)

Use the up/down buttons to select  

To enter menu press 

You will then see:



Press 

Displayed will be	>	Job Timer	0.0
		Reset timer	
		Total Timer	0.0
		Reset timer	

The small arrow > at the left of the text denotes the chosen selection.

To select another option use the up/down buttons  

To select chosen option.Press 

To Exit this screen press: 

Scroll through the menu's using the arrow keys  

If you press the Down key –



The next screen displayed is **Machine Set Up**



To enter press ✓

Displayed will be

Machine Setup
 > Machine Type
 Fitted Options
 Swap Solenoids

To enter sub menu press ✓
(The > denotes choice)

(Machine Type) Move > with up and down buttons to select ↑ ↓

To select press ✓

To return to previous screen press ↶

(Fitted Options) Move > with up and down buttons to select ↑ ↓

To select option press ✓

to accept option



or to deselect option



To return to previous screen press ↶

(Swap Solenoids) Move > with up and down buttons to select ↑ ↓

To select option press ✓

to accept option



or to deselect option



With this facility it allows operations of functions to be swapped without changing the wiring or hoses

To return to previous screen press ↶

Press the Down key again –



The **User Settings** screen will be displayed



To enter press



User Settings

- > First Arm Lift
- First Arm Lower
- 2nd Arm In
- 2ND Arm Out
- Cowl (Head) CW (Clockwise)
- Cowl (Head) CCW (Counter Clockwise)
- Slew In
- Slew Out
- Tele In
- Tele Out
- Reset Defaults

Move > with up and down buttons to required option



To select option press



Each option will display:

- > Slow ✓
- Medium
- Fast

This shows the slow option has been selected for this operation

> Slow ✓

To change this use the up and down buttons



When selection has been made press



To confirm and accept

To return to previous screen press



It is possible to set up the operation of each service in both directions to which ever speed suits the operator.

Reset Defaults option

> Reset Defaults

If this is selected it will reset the settings to the factory defaults.

To return to the main menu press



Press the Down key again –



The **Oil Warnings** screen will be displayed:

Oil Warnings



(This Icon will be displayed on the screen when attention is due or maintenance required.)

To enter press



- > **Oil Warnings**
- Oil Filter
- Tank/GBX (Gearbox) Check
- Grease Warning
- PTO Overspeed

Move > with up and down buttons to required option



To enter sub menu press
(The > denotes choice)



- > **Oil Filter**
- Hours; 000.00
- Reset Timer

This displays the hours remaining (Counting Down) until the filter requires changing.

When the filter has been changed press the down button



Select Reset Timer Option

- > **Oil Filter**
- Hours; 000.00
- Reset Timer

To enter press



The timer will be reset.

To exit press



Move to the next option by pressing the down button



- > **Oil Warnings**
- Oil Filter
- Tank/GBX Check
- Grease Warning
- PTO Overspeed

To enter sub menu press
(The > denotes choice)



Move > with up and down buttons to required option  

To enter sub menu press
(The > denotes choice) 

Tank/GBX Check
> Hours; 000.00
Reset Timer

This displays the hours remaining (Counting Down) until the oils require changing.

When the oils have been changed press the down button 

Select Reset Timer Option

Tank/GBX Check
> Hours; 000.00
Reset Timer

To enter press 

The timer will be reset.

To exit press 

Move to the next option by pressing the down button 

Oil Warnings
Oil Filter
Tank/GBX Check
> Grease Warning
PTO Overspeed

To enter sub menu press
(The > denotes choice) 

Grease Warning
> Hours; 000.00
Reset Timer

This displays the hours remaining (Counting Down) until the machine requires greasing.

When the machine has been greased press the down button 

Select Reset Timer Option

Grease Warning
> Hours; 000.00
Reset Timer

To enter press 

The timer will be reset.

To exit press 

Move to the next option by pressing the down button 

Oil Warnings

- Oil Filter
- Tank/GBX Check
- Grease Warning
- > PTO Overspeed

PTO Overspeed

This option (when fitted) records the amount of time that the PTO has exceeded 540 r.p.m. This cannot be reset.

To exit press 

Press the Down key again – 

The **Diagnostics** screen will be displayed:



To enter press 

Diagnostics

- > Joystick
- Keypad
- Voltage
- Sensors

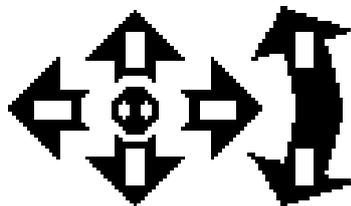
Move > with up and down buttons to required option 

To enter sub menu press (The > denotes choice) 

Diagnostics

- > Joystick
- Keypad
- Voltage
- Sensors

Joystick



Xø Yø Zø

As the joystick is moved the bars in the joystick will illuminate. When the joystick is in neutral there should be 6 clear bars displayed. Should there be shading in any of the bars with the joystick in neutral a fault is indicated and there is a problem with the joystick. Contact Bomford Turner Service Department.

To exit press 

Move to the next option by pressing the down button 

Diagnostics

- Joystick
- > Keypad
- Voltage
- Sensors

Keypad

Keypad Test: Press each button, The symbol displayed on the button will now be displayed on the LCD screen. If a button is depressed and nothing appears on the screen a fault is indicated in the keypad. Contact Bomford Turner Service Department.

To exit switch Off control box with On/Off switch 

Switch box back on and return to Diagnostics menu. To enter press: ✓

Move to the next option by pressing the down button ↓

Diagnostics

- Joystick
- Keypad
- > Voltage
- Sensors

Battery



Voltage: 00.0v

This indicates the voltage at your power source. Additionally it indicates if the alternator is charging

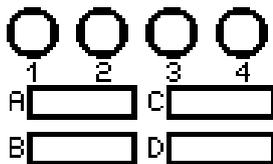
To exit press ↶

Move to the next option by pressing the down button ↓

Diagnostics

- Joystick
- Keypad
- Voltage
- > Sensors

Sensors

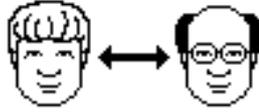


The above graphic will be displayed, these are only in operation if the option is fitted to the machine.

To exit press ↶

Press the Down key again – 

The **Select User** screen will be displayed:



To Enter press 

The following will be displayed:

```

Select User
> User A ✓
  User B
  User C

```

(The > denotes choice, the ✓ confirms selection)

To enter press 

All the settings previously set throughout the system will be held in each user menu.

To set up user B move > with up and down buttons to select the ✓ confirms selection  

```

Select User
  User A
> User B ✓
  User C

```

To exit press 

Scroll up or down to find User Settings menu  

User Settings



To enter press 

Now repeat set up of services as required.

The factory default settings mean

```

User A is Slow
User B is Medium
User C is Fast

```

It is possible to enter each user and alter each ram service individually as required.

If unsure scroll down to Reset Defaults using Down button



User Settings

First Arm Lift

First Arm Lower

2nd Arm In

2ND Arm Out

Cowl (Head) CW (Clockwise)

Cowl (Head) CCW (Counter Clockwise)

Slew In

Slew Out

Tele In

Tele Out

> Reset Defaults

Press the accept button



All the settings will be reset to the factory defaults.

Fault Diagnostics:

During use if a service fails to operate check the LCD screen for a graphical error message. Operate joystick; if there is an electrical problem it will be highlighted on the screen. If not, enter Diagnostics screen and perform joystick and keypad checks. If problem persists or fault cannot be found contact Bomford Turner Service Department.

The error message will replicate the service trying to be operated. See the example below:



1st Arm Lift not operative

CORRECT HYDRAULIC OILS FOR FLAIL MOWERS

The list of oils on page 8 – 2 has been approved for use with hydraulically driven flail mowers. All these oils tolerate a wide temperature range.

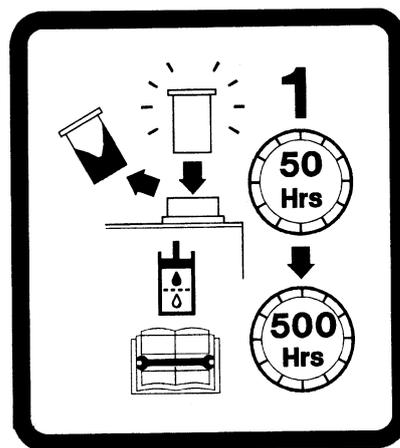
Customers using oil not recommended will invalidate warranty on hydraulic equipment.

1 FILTER REPLACEMENT

THE FILTER ELEMENT SITUATED IN THE FILTER UNIT IN THE TOP OF THE TANK MUST BE REPLACED INITIALLY AFTER 50 HOURS OF WORK AND THEREAFTER EVERY 500 HOURS' WORK OR AFTER TWO SEASONS' WORK.

2 FILL TANK WITH OIL - unless already full

NOTE BEFORE FILLING THE TANK WITH OIL CONNECT THE MOTOR DRIVE HOSES TOGETHER USING ONE OF THE ADAPTERS FROM THE MOTOR FITTED TO THE CUTTING HEAD.



The correct procedure for filling the oil tank is as follows:

- a Remove breather cap and strainer assembly and place at side of tank.
- b Check unions on suction hose from tank to pumps for tightness and freedom from kinks and restrictions.
- c Fill tank to half way up the sight glass with the correct grade of oil.

IMPORTANT ONLY USE A MAKE/GRADE OF OIL ON THE RECOMMENDED LIST.

- d Replace breather cap and strainer assembly.
- e Avoid contamination at all times particularly when the breather cap and strainer assembly is removed.

3 GEARBOX - Recommended oil

MOBIL - MOBILAND UNIVERSAL MULTI-PURPOSE TRACTOR
EXELUBE - SUPER UNIVERSAL TRACTOR OIL

Check oil level before use and top up if necessary.

Gearbox capacity 0.5 litres

4 GREASING PIVOT POINTS

Any lithium-based grease can be used for lubricating pivot points

APPROVED OILS FOR USE IN BOMFORD TURNER HYDRAULIC EQUIPMENT

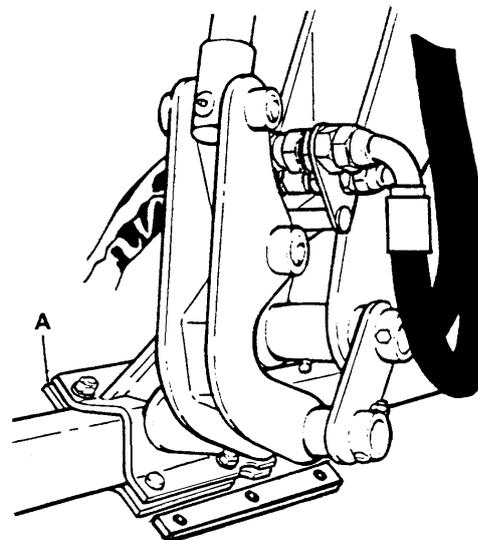


ANTAR	-	Agria FM 10W/30
B.P.	-	Energol SHF 32 (ISO)
	-	Energol SHF 46 (ISO)
	-	Energol HLP 32 (ISO)
BRASWAY	-	HO.32V
CALTEX	-	Rando HD 46
	-	Five Star Motor Oil 10W
	-	RPM Delo 200 10W
CASTROL	-	Hyspin AWH 46 (not AWS 46)
	-	Hyspin AWH 68 (not AWS 68)
	-	Agricastrol Multi-use 10W/30 (not 20/30)
	-	Agricastrol Hydraulic Oil
CENTURY OILS	-	Nevis 10
COMMA OIL	-	Comma LIC 10 Hydraulic Oil
DALTON	-	Silkolene - Grade 219
DUCKHAMS	-	Fleotol Multilite 10W/30
	-	ZirconQ32
	-	Zircon 68
ELF	-	Multiperformance 2B 10W/30
	-	Olna 46
	-	Hydelf 32
	-	Hydelf 68
ESSO	-	Univis N46
FILTRATE	-	Hydraulic Oil 10W/30
FORD	-	M2C-48-C Multi-purpose Hydraulic Oil
GULF	-	Gulflube Motor Oil XHD 10W/30
	-	Gulf Hydrasil 32
	-	Multi G 10W/30
J.O. BUCHANAN	-	Alpha 'O' 10W/30
	-	Hydroil 66
LORCO	-	FVT 46 Fourfold Treated Hydraulic Oil
MOBIL	-	DTE 15
DTE 24	-	Delvac Special 10W/30
PETROFINA	-	Fina Delta Multigrade 10W/30
	-	Fina Hydran 32
	-	Fina Hydran 68
SHELL	-	Tellus T46
	-	Tellus T37
TEXACO	-	Rando AZ 32
	-	Rando CZ 68
TOTAL	-	Equivis ZS32
	-	Equivis ZS46

1 FITTING THE CUTTING HEAD

With the machine assembled the cutting head can now be fitted to the end of the arms.

- a Start tractor engine.
- b Raise the arms so that the cutting head clamp is approximately 500mm clear of the ground.
- c Place cutting head directly in front of the clamp.
- d Level up cutting head with wood packing if necessary.
- e Remove clamp bracket (A) from the end of the arms.
- f Adjust position of the arms until the cutting head clamp is lined up with the clamping bar on top of the cutting head in the desired position along the bar.
- g Replace clamp bracket (A).

**2 CONNECTING THE MOTOR**

The connection of the hoses to the motor will determine the direction of rotation of the rotor shaft.

- a Connect the hoses to the motor.
- b Start the tractor and engage the PTO with engine on low revs.
- c Switch on a Rotor Direction switch.
- d Check the direction of rotation matches the Rotor Direction switch selected.
- e Press the Rotor Stop switch to stop the rotor, disengage PTO and stop the tractor engine.
- f If the rotor shaft has run in the wrong direction, reverse the large hoses on the motor.

WITH THE MACHINE FULLY ASSEMBLED, FAMILIARIZE YOURSELF WITH ALL THE CONTROLS, START THE TRACTOR AND CHECK FOR LEAKS

1. BREAKOUT - SLEW, PARALLEL AND NON PARALLEL MACHINES

A hydraulic safety breakout is incorporated in the slew system to protect the machine should the cutting head come into contact with an obstacle such as a gatepost.

To check the breakout is operating correctly:-

- a Using the slew control power the kingpost forward into the stop bracket on the mainframe.
- b With the cutting head against an obstacle drive gently forward until the unit folds back about 300mm (12").
- c Reverse the tractor and the arms will automatically swing back to their normal working position. If you feel that either the ram moved too easily or that it moved only with difficulty then the pressure requires checking.
- d Correct service line pressure: 136 bar
Accumulator charge pressure: 90 bar

1 HOSES

DANGER! Do not operate this Equipment with hydraulic oil leaking. Do not check for leaks with your hand! Use a piece of heavy paper or cardboard. High-pressure oil streams from breaks in the line could penetrate the skin and cause tissue damage including gangrene. If oil does penetrate the skin, have the injury treated immediately by a physician knowledgeable and skilled in this procedure.

It is important that hoses are fitted correctly. To ensure that there are no kinks or sharp bends, and that the hoses do not chafe against sharp edges, the following instructions and diagrams should be used as a guide.

2 TWISTS

Hoses should never be twisted or kinked. On most hoses there is a line which runs the full length of the hose acting as a useful guide. If there is no guideline running along the hose, follow the fitting instructions below. (See Fig 8.)

- a Loosen any clamps.
- b Attach one end of hose to its coupling, but do not tighten.
- c Place the hose in its required position.
- d Connect other end loosely to its union.
- e Tighten angled end of hose in required position.
- f Tighten straight end. It may be found that as the nut is tightened the hose may twist slightly. If this happens follow instruction (g), if it does not follow instruction (h).
- g Slacken off nut and turn hose in opposite direction to that of twist.
- h Re-tighten nut and bring hose back centrally.
- i Tighten any clamps.
- j Finally, re-bleed the rams and operate the arms in all positions whilst carefully checking for twists and obstructions.

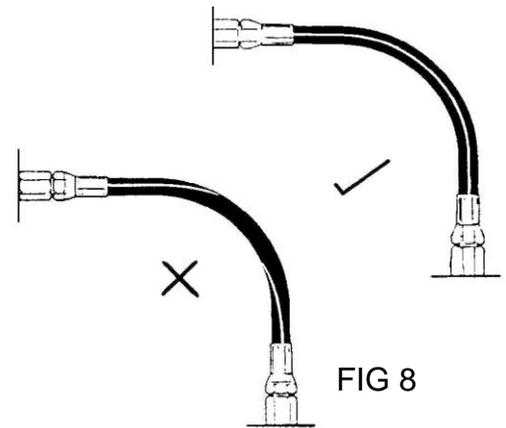


FIG 8

3 SHARP BENDS

- a AVOID SHARP BENDS
- b Always allow enough hose radius for free movement (see Fig 9).

4 CHAFING HOSES

- a AVOID CHAFING HOSES
- b Always give plenty of clearance around sharp edges (see Fig 10).

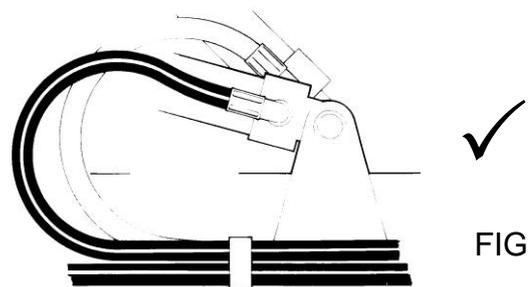


FIG 9

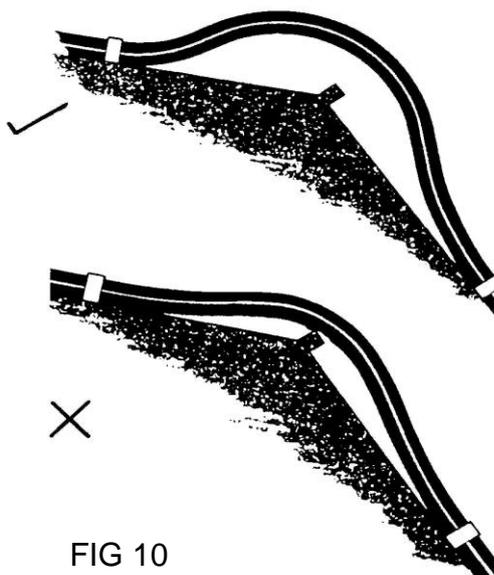
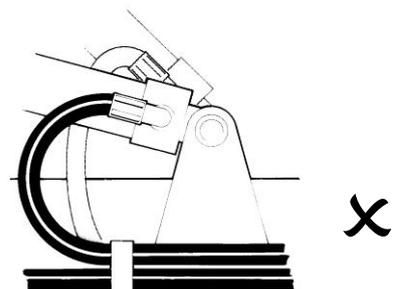


FIG 10

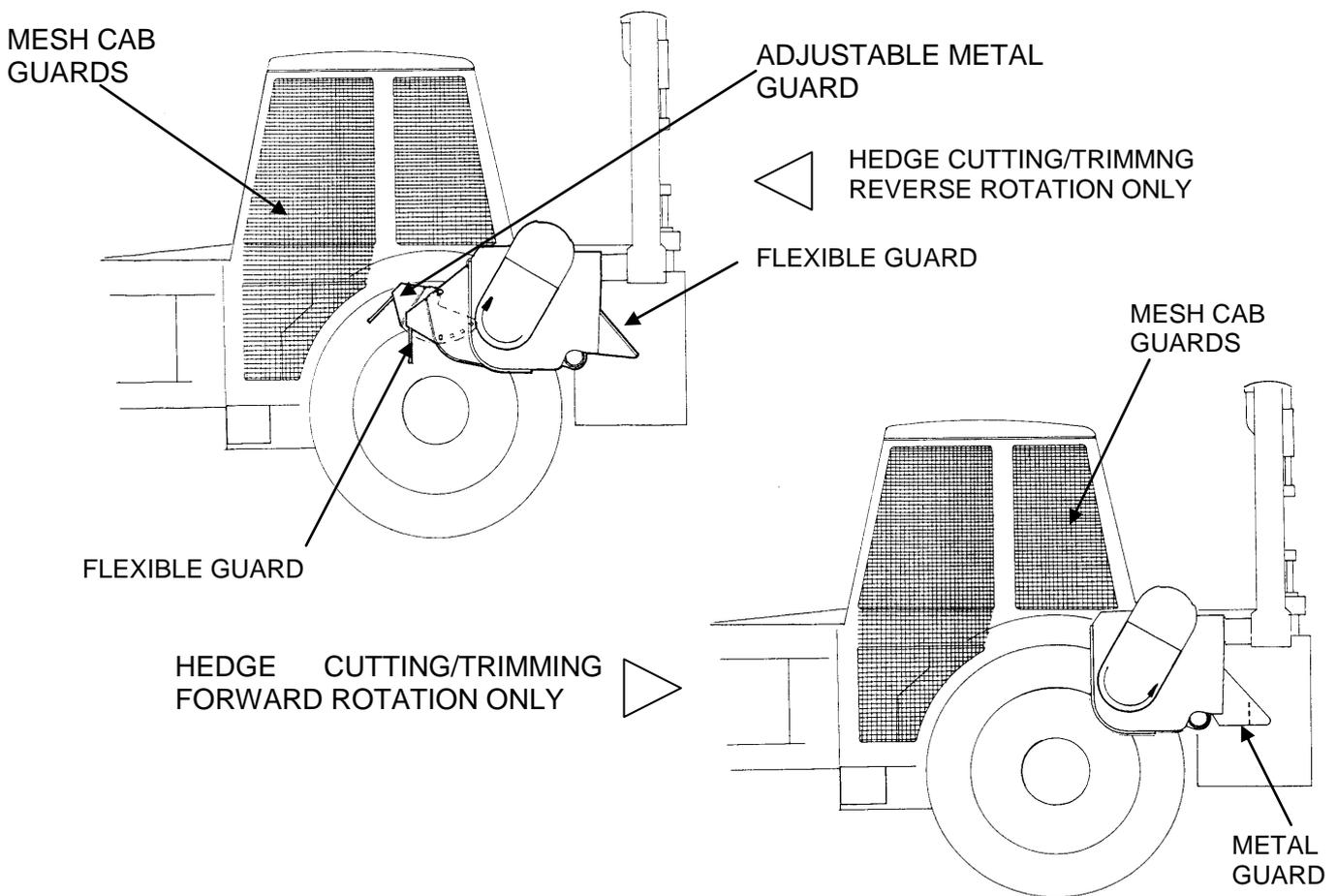


GUARDS

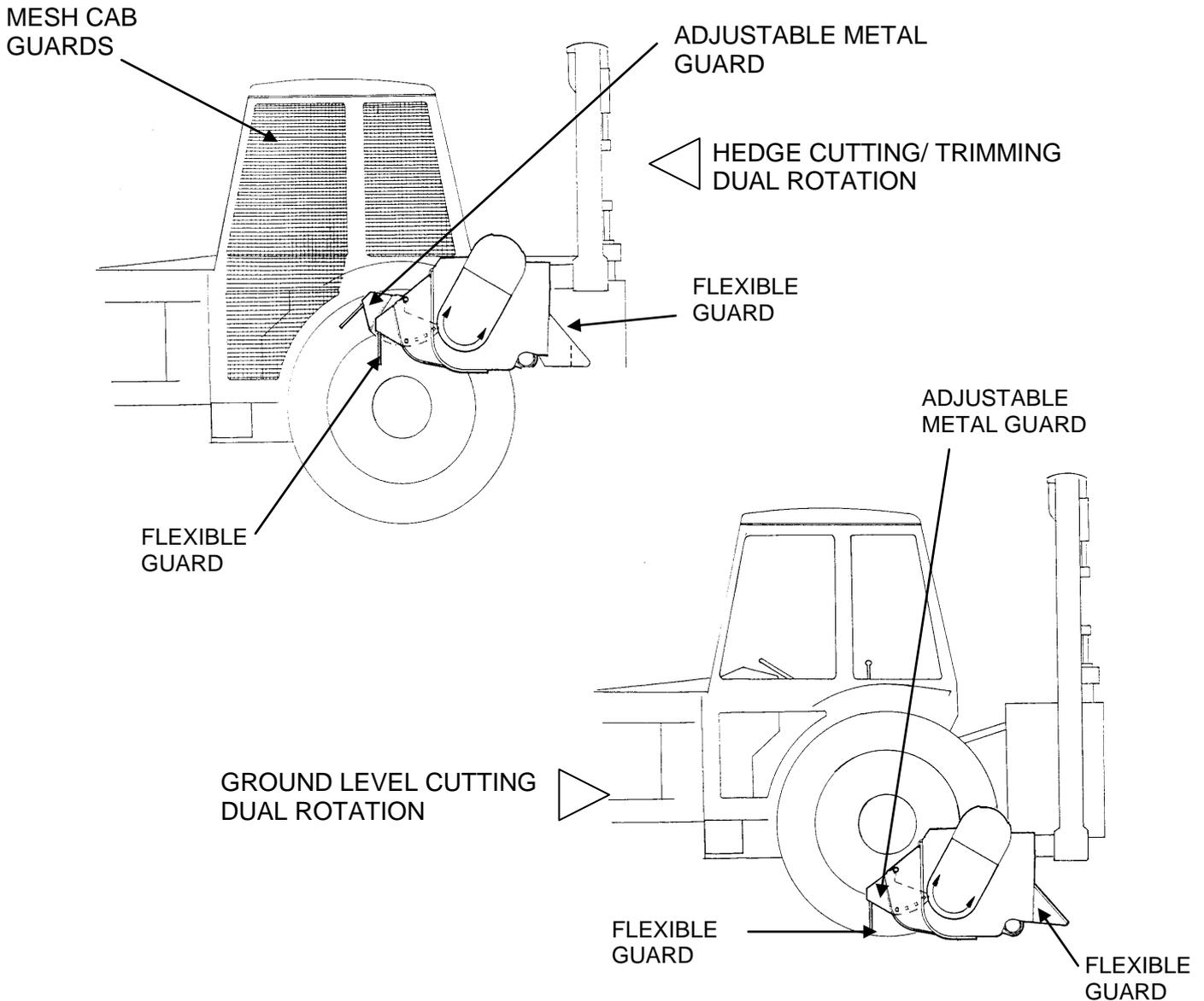
1. It is essential that in the interests of safety all guards and the roller must be kept in position on the machine whenever the machine is running. Refer to the safety section at the beginning of this manual. Bomford Turner Ltd disclaim all responsibility for any damage or injury arising as a result of guards or roller being removed, or of guards other than of Bomford Turner manufacture having been fitted, or of operation of the machine other than in accordance with these instructions.
2. When hedge cutting/trimming or any operation where the cutting head is not in contact with the ground, a weld mesh guard (Part No. 90.050.06) must be fitted to the side window of the tractor cab. Cabs without laminated or toughened glass must also be fitted with a laminated glass or polycarbonate shield.

SHAFT ROTATION

The direction of the rotor shaft rotation can be changed by operation of the appropriate rotor direction switch. Ensure the correct guards are fitted for all rotations used.



DANGER! Do not operate the machine without the correct guards fitted. Serious injury or death could occur from entanglement or thrown objects.



IMPORTANT INSPECTION OF GUARDS

Inspect guards twice daily or immediately damage is suspected.

Replace guards that have damage or wear which could impair their performance, as follows:

- a **STEEL GUARD:** distorted or with sharp outer edges.
- b **WIRE TRAP GUARD:** with bent, missing or blunt cutting edge.
- c **FLEXIBLE GUARD:** with missing portions, damaged, or worn sufficiently to permit stones to be ejected beneath it in normal conditions.

IF IN DOUBT CONSULT BOMFORD TURNER SERVICE.

1 OPERATOR

These notes are produced for guidance and are intended to help you obtain the best results from your machine, with the minimum of trouble and downtime.

Read the following pages carefully and familiarise yourself with their contents.

Make a note of the serial numbers; stamped on the top of the mainframe and the cutting head itself, inside the front cover of this manual. Always quote these numbers in any correspondence with your dealer.

2 INITIAL CHECKS

Check that the tractor is equipped to deliver 540 rev/min at the PTO shaft. The machine is designed to run at this speed and IN NO CIRCUMSTANCES MUST THE PTO EXCEED 600 REV/MIN.

3 MACHINE PRE-START CHECK

With the tractor engine stopped and the ignition key removed:-

- a Check that the rotor is free from obstructions especially pieces of wire.
- b Check that all flails are in good condition and securely attached to the rotor.
- c Check that all guards are in their correct place (see Section 12) and also that they are in good condition.
- d Check the oil level in the tank. The level is correct when up to the indicator mark in the sight glass or visible in the bottom of the filler assembly strainer. DO NOT OVERFILL. Most oils increase in volume as they warm up and aerate and can then spill out through the breather. (Refer to Approved Oils Section.)

4 STARTING UP PROCEDURE

COLD START UP

When starting the machine for the first time, prior to commencing work, it is essential not to run the pumps initially at too high a speed. Therefore the tractor PTO speed should not exceed 360 rev/min, and should only reach this speed gradually. The cold start up instructions given below should be strictly adhered to:-

- a Ensure that the tractor PTO drive is in neutral.
- b Start tractor engine, run at idle speed and engage PTO drive.
- c Select motor start switch.
- d Gradually increase engine speed.
- e Continue increasing engine speed until rotor is running smoothly and PTO speed is approximately 350 rev/min.
- f Run rotor at this speed for minimum of 5 minutes to allow oil in system to warm up.
- g The machine is now ready for work.

NORMAL START UP

- h Never attempt to start the rotor while it is under load. Always free the rotor from any obstructions first.
- i Never increase or decrease PTO speed rapidly as this can lead to pump and motor damage.

5 TRANSPORT

Normally the machine will need to be driven to the work site before commencing work. To keep the machine/tractor width to a minimum it is necessary to fold the arms to the transport position. The cutting head should be placed on the transport support bracket provided.

- a Keep hoses away from tyres.
- b When the machine is in the transport position it is essential that all the isolator valves are closed.
- c When transporting with the arms slewed back, keep the first arm vertical as the arms can bounce forward and damage the tractor cab.
- d When transporting on the highway, obey all relevant highway laws.



Cutting Head Placed On Support Bracket
(Telescopic arm machine illustrated)

6 CUTTING CONTROL

Do not swing cutting unit inboard beyond vertical cut when arms are raised above tractor cab height. In this position a loss of control can occur.

Roller Height

The roller on the cutting unit is set in its middle position before the machine leaves the factory. It should be reset to suit the operating conditions and cut length required.

a Grass Cutting

Adjust the height of the roller to give required cut length. The higher the roller is raised the shorter the grass.

Note: The higher the roller is set the greater the flail wear.

b Hedge Trimming

Raise roller to its maximum to give lowest cut possible.

IMPORTANT

THE ROLLER MUST BE KEPT IN POSITION AT ALL TIMES AS IT IS AN ESSENTIAL PART OF THE CUTTING UNIT GUARDING.

7 STOPPING THE CUTTING UNIT

The rotor must only be engaged/disengaged by means of the rotor on/off control lever or switch depending on method of control (cable or electric). see Section 7. Stopping the rotor by use of the tractor engine stop or PTO control risks damage to the cutting unit's hydraulic system, and should only be used in an emergency.

If the rotor is stopped by use of either the tractor engine stop or PTO control, care must be taken to ensure the rotor control lever is returned to the OFF position before restarting the tractor.

8 ARM FLOAT (Optional)

The machine is fitted with an accumulator to allow the arms to float for grass cutting application.

The purpose of the armfloat is to permit the cutting unit to follow uneven ground without operator intervention as far as possible and to allow most of the weight of the cutting unit to be carried by the tractor, thus minimising the tendency to slew. This also reduces wear on the rotor and in the bearings of the roller.

The armfloat is not used when hedge trimming, as the cutting unit would be very difficult to control and uneven (castellated) results would be obtained.

To shut off the arm float close the isolator valve manually or by means of the switch on electric machines. When opening the isolator valve ensure all head weight is on the ground, otherwise the first arm may move unexpectedly.

WARNING

THIS VALVE MUST BE CLOSED WHEN THE MACHINE IS TRAVELLING, WHETHER IN TRANSPORT POSITION OR NOT.

Test procedure of the armfloat Accumulator

- a Start tractor engine and move the arms into a normal work position with the rotor unit resting on the ground.
- b Open accumulator isolator valve by switching on the float.
- c Operate the first ram and lift the rotor unit about 1 metre (39 ins) off the ground).
- d Test accumulator by pushing the rotor unit downwards. This should compress the first ram slightly.
- e No movement of the first rams normally means the accumulator is inoperative or the isolator valve is defective.
- f Replace the cutting head back on the ground. Operate the control levers to remove pressure from the hydraulic system.
- g Stop tractor engine.
- h Remove isolator valve. Reconnect hose and repeat test from (a).
- i No movement of the first ram at this time indicate that the accumulator is not working. Movement indicates that the isolator valve is defective. Repeat instruction (f) and replace defective part.

1 OPERATING HINTS

- a Keep tractor PTO speed at 540-550 rev/min to maintain the correct rotor speed for the job to be tackled. Depending on the build of the cutting head fitted this may be either 3200 rev/min advised for HEDGE CUTTING, or 2485 rev/min advised for GRASS CUTTING (see Section 16-10).
Slower speeds MAY reduce the quality of cut obtained by the rotor, but satisfactory performance can be maintained down to a rotor speed of 2100 rev/min. This can be an advantage with tractors with a high 1st gear.
- b Examine the piece of work to be cut. It is very important that the work site is inspected before cutting and all hidden obstructions removed or their position clearly marked so they may be avoided.
- c Check hedges for wire and fencing stakes, and ditches for tree stumps, drain pipes, large stones, etc.
- d Stalling in heavy growth is likely to cause damage to the rotor.
- e Do not operate with the head slewed more than 40° backwards.

WARNING DO NOT ALLOW PERSONNEL NEAR THE MACHINE WHILE IT IS OPERATING.

- f DO NOT angle the cutting head in such a way as to throw cut material towards the tractor.
- g Avoid rushing into the work. Remember that the head has to chop up material as well as cut it to the required height.
- h When hedge cutting close the isolator valve on the arm float accumulator, (if fitted.)
- i Always give the rotor shaft enough material to 'bite' into, particularly when a hedge has a lot of leaf and very flexible thin stems.

2 GRASS CUTTING (Rotor Shaft Speed 2485rpm.)

- a Run the rotor at normal speed, i.e. 540 rev/min. PTO speed
- b Avoid taking in too much grass by regulating tractor forward speed.
- c If rotor shaft slows down or begins to choke up in grass, raise the cutting unit a little and allow grass to fall clear.
- d Before proceeding with the cutting let the rotor speed recover again.
- e Advantage may be gained in exceptional conditions by taking a narrow cut with part of the cutting head clear of the work.
- f When working alongside or clearing ditches, take a first cut along the edge of the ditch so that the ditch limits can be seen.
- g When working over a hedge or into a ditch, keep the highest point of the mower arms directly over the obstacle.
- h Do not run the machine for prolonged periods when the head is not at 90° to the direction of travel.

3 HEDGE TRIMMING (Rotor Shaft Speed 3200 rpm).

Consider how the job should be done before commencing work, as every hedge has a different height, width, thickness and density of growth.

Hedges that have previously been cut by machine tend to have denser growth, and although they can be cut to any desired shape, it is advisable to trim to the same shape and height as before.

The flails encourage the new growth to 'tiller' (spread) and thicken up the hedge. Therefore it is advisable to cut the hedge side at a slight angle rather than vertical, otherwise the hedge may eventually die at the bottom due to lack of light.

The following information gives a few hints on how to tackle a hedge.

- a First trim the top down to level of the previous year's trim in one cut, but do not cut into it as the old growth will be very thick and strong and can cause premature wear to the flail cutting edges.
- b Next trim the sides to the previous trim but not into it.

WARNING DO NOT ANGLE THE CUTTING HEAD SO THAT ANY DEBRIS IS THROWN THROUGH THE HEDGE WHEN TRIMMING THE FAR SIDE OF THE HEDGE. ALWAYS ENSURE CUT MATERIAL IS DIRECTED AWAY FROM YOU OR ON TO THE GROUND.

- c Finally, lower the roller and trim along the bottom of the hedge to clear debris and undergrowth.

4 STALLING THE ROTOR

If the rotor does become choked the tractor will stall, the belts will slip or the relief valve will operate.

If this occurs follow the instructions below:

- a Stop forwards motion and stop the cutting unit immediately by pressing the rotor stop button..
- b Ensure that the rotor has stopped and then lift the cutting head.
- c Stop tractor engine.
- d Ensure that the machine is safely supported and remove any obstruction that may be present on the rotor.

IMPORTANT! NEVER IN ANY CIRCUMSTANCES run or reverse the rotor to "clear itself".

1 STORAGE

It is preferable to store the machine in dry conditions under cover when not in use. Before removing the machine from the tractor a thorough check of the machine should be made as follows.

- a Thoroughly clean all moving parts, particularly the cutting unit
- b Check that all flails are in place and that they are in good condition
- c Check all hoses for damage such as cracks, evidence of chafing and leaks
- d Smear all unpainted metal parts with grease and lubricate all grease nipples.
- e Make a note of any item that needs replacing so that parts can be ordered

2 PARKING AND REMOVAL

To remove the machine from the tractor the following procedure should be followed.

DANGER! DO NOT ALLOW PERSONNEL BETWEEN TRACTOR AND MACHINE WHEN MANOEUVRING.

In the parked position the machine is supported by two stands on the mainframe and also the cutting unit. A typical example is shown below.



- a Find a flat, hard area on which to park
- b Place the cutting unit on the ground at the rear of the machine as illustrated above.
- c Stop tractor engine.
- d Lower the stands from their stored position.
- e Adjust top link/hydraulic drop arms so that the weight of the machine is on the stands and cutting head.
- f Open armfloat valve (if fitted) and operate controls in both directions to release pressure.
- g CLOSE ISOLATOR VALVES ON FIRST RAM AND ARMFLOAT (IF FITTED).
- h Disconnect electric cable from control box to control valve and feed through rear of cab. Store cables inside mainframe and protect from weather.
- i Release tractor end of PTO shaft and pull back along splines until the PTO shaft is free from the tractor.
- j Remove axle fork latches.
- k Detach drop arms from yoke on mainframe.
- l Start tractor engine and drive carefully forward releasing the machine from the tractor.
- m Remove PTO shaft from machine and store in secure position.
- n Replace cap over PTO output shaft on tractor.

1 POWER TAKE-OFF SHAFT

The PTO shaft used is of the normal agricultural type. Spares kits comprising the spider, needle bearings, circlips etc., are available from your dealer. For correct part numbers, which must be quoted when ordering spares, see parts manual.

Some routine maintenance is needed to ensure a trouble free life for the PTO shaft.

- a Grease both ends of PTO shaft daily.
- b Grease the PTO shaft tubes regularly.
- c Ensure guard check chains are securely attached and in good condition.
- d Check that PTO guard is in good condition and replace if cracked or damaged.
- e Check universal joint bearing journals for roughness or slackness. Replace if necessary.

2 HOSES

It is false economy to try and make a damaged hose last a bit longer, because a failure can spill a lot of oil on the road endangering traffic and costing money. To reduce the risk of this happening and ensure a long life from the hoses, follow the instructions given below:

- a Check weekly that all hoses and their connections (with particular attention to the rotor drive circuit) are in good condition and that there are no leaks or damage.
- b Replace any hose that is leaking or damaged.
- c Ensure that hoses have not chafed against sharp edges. If they have, inspect damage and replace.
- d Re-route any hose that has been chafing (see Section 11).
- e Ensure that hoses are fitted without kinks or sharp bends (see Section 11).
- f Pay particular attention to the suction hose from the tank to the pump.
- g If in doubt about the condition of any hose it must be replaced.

<i>Recommended Torque Settings for Hose Nuts</i>		
1/4" BSP	=	24 N.m (18 lbf ft)
3/8" BSP	=	33 N.m (24 lbf ft)
1/2" BSP	=	44 N.m (35 lbf ft)
5/8" BSP	=	58 N.m (43 lbf ft)
3/4" BSP	=	84 N.m (62 lbf ft)
1" BSP	=	115 N.m (85 lbf ft)

DANGER! Some hoses may contain residual high pressure take care when removing. High pressure oil streams could penetrate the skin and cause tissue damage including gangrene. Hot oil can burn or scald.

3 PINS

Periodically check all pins for damage and correct retention.

4 RAMS

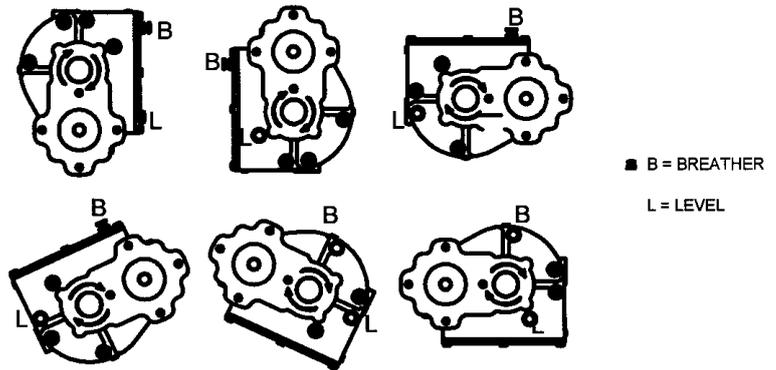
It is advisable to check all ram caps for tightness occasionally and if found to be loose tighten them immediately.

5 GEARBOX

Check oil level before use and top up if necessary

Drain and replace oil after first 50 hours' work, thereafter every 1000 hours or 12 months, whichever is the earlier. The position of the filler plug is dependent on the orientation of the gearbox.

Various examples are shown



Recommended oil:

MOBIL MOBILAND UNIVERSAL MUTLI-PURPOSE TRACTOR OIL
EXELUBE SUPER UNIVERSAL TRACTOR OIL

Gearbox capacity 0.5litres

6 GREASING

Any good quality lithium based grease may be used for lubrication of pivot pins and bearings.

There are a number of greasing points on the machine that need regular attention.

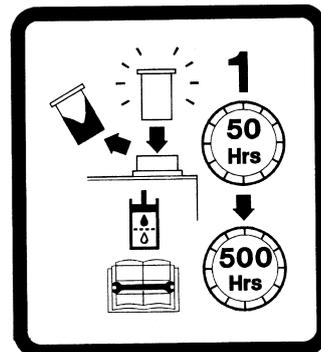
Do not over grease the roller and its bearings or the carriers may be forced apart and distorted by the pressure.

To grease the rotor shaft bearings follow the instructions below:

- a Place head on ground or support it safely.
- b Stop tractor engine and disengage drive to PTO shaft.
- c Rotor shaft bearings - grease nipples are located through a cut out in the drive guards.
- d Apply grease to the nipples but do not grease violently as damage to the seals may result.
- e Do not over grease or it could cause overheating.

7 FILTER

The element must be changed after the first 50 hours work and thereafter every 500 hours.



8 ROTOR SHAFT

WARNING! Flails - Check each day that flails are in good condition and securely attached to the rotor shaft. Replace any that are damaged and tighten any loose nuts. Flails that become detached may be thrown great distances and cause injury or death.

IMPORTANT Vibration of the rotor shaft will cause premature failure of the rotor shaft bearings, as well as hydraulic and structural failures. It is important not to operate the machine with the cutting head vibrating. As soon as any vibration is felt stop operating the machine and make the checks listed below:

- a Place head vertically on ground or support it safely.
- b Stop tractor engine and disengage PTO drive.
- c Check flails are in place and the securing nuts and bolts are tight.
- d Check for missing or worn flails. Always replace missing/worn flails in pairs opposite each other to maintain shaft balance.
- e When replacing missing/worn flails check if the retaining bolts are worn or bent. Replace any suspect bolts. Always fit new locknuts and spring washers when replacing flails. When changing flails NOTE position of spring washers and replace in same position.

IMPORTANT ONLY FIT GENUINE BOMFORD TURNER PARTS.

- f If any flails were missing or loose and have been replaced or tightened, run the rotor and retest for vibration. If vibration is still present check rotor shaft bearings as follows.
- g Stop tractor engine and disengage PTO drive.
- h Check rotor shaft bearings for roughness or signs of slackness.
- i Replace bearings if either of the above symptoms are found. If vibration persists it is an indication that the rotor shaft is probably bent and must therefore be replaced.

ATTENTION

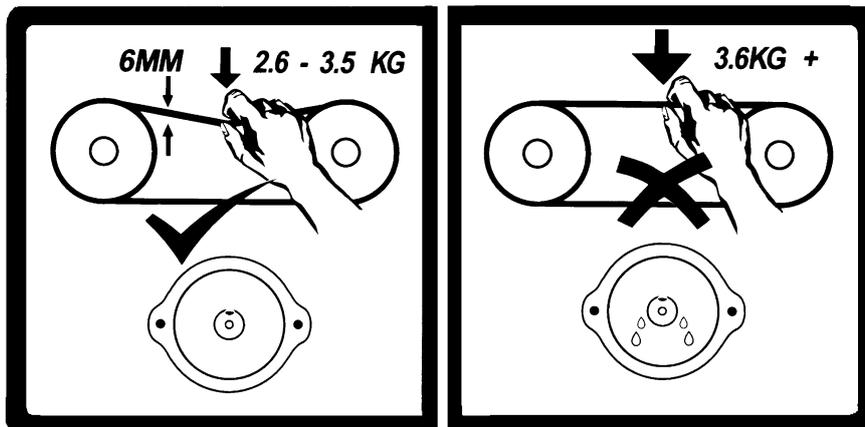
When replacing bearings or changing pulley ratios, ensure the centre bolt retaining the taperlock is fully tightened, before tightening the grub screws holding the taper lock to pulley. Failure to do this may result in the bearing rotating on the shaft journal

9 TENSIONING DRIVE BELTS

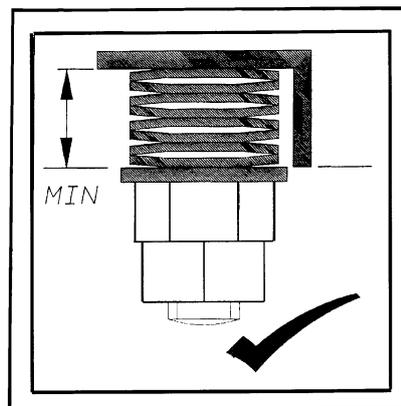
The rotor shaft is driven from the gear motor via 'V' belts, which are adjustable for tension.

The instructions below describe the procedure for tightening the belts.

- a Stop tractor engine and disengage PTO drive.
- b Remove drive guard.
- c Check the tension by applying a force of 2.6-3.5kg at right angles to the belts in the centre of the two pulleys. If the deflection is greater than 6mm increase the belt tension.



- d Release the motor mounting plate bolts (C).
- e Turn the locknut to compress the Belville washers until the flat washer is level with angle bracket. This will give the correct belt tension
- f Tighten locknut and motor mounting plate bolts.
- g Replace belt cover.



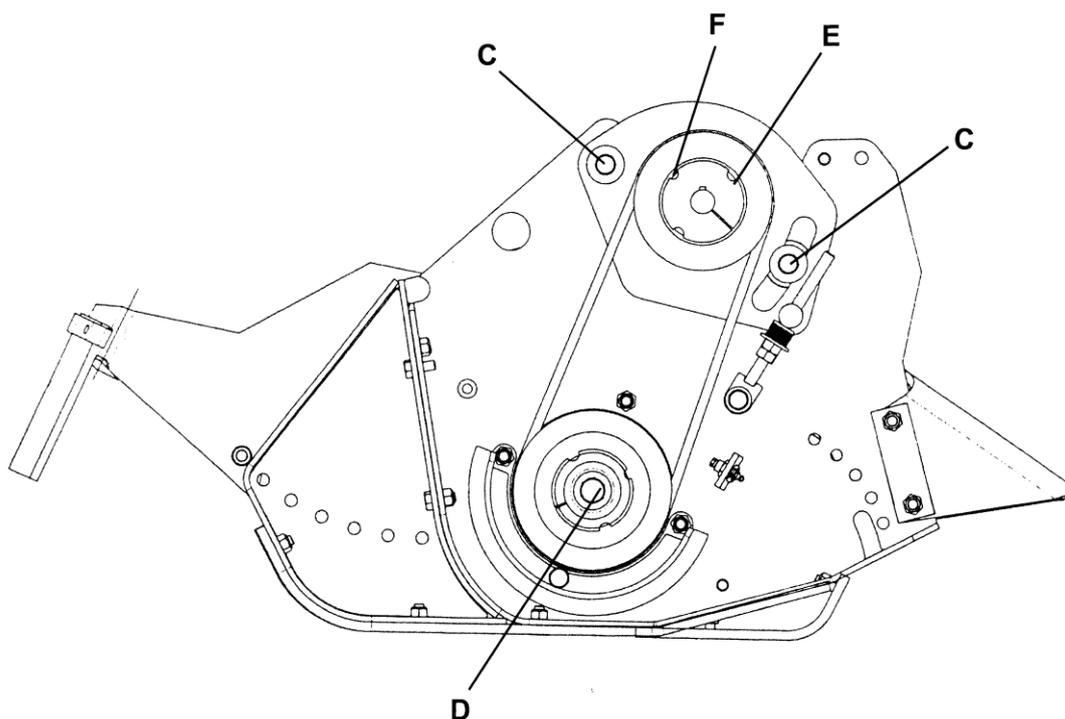
ATTENTION DO NOT OVERTIGHTEN BELTS as this may cause premature failure of the rotor shaft, motor bearings and seals.

10 REVERSING THE DRIVE PULLEYS

Some cutting units have unequal pulleys for either **hedge trimming** or **grass cutting**, see General Operation - Section 13

Hedge cutting 3200 rpm large pulley fitted to motor, Grass cutting 2485 rpm small pulley fitted to motor.

- a Stop tractor engine and disengage PTO drive.
- b Remove drive guard.
- c Slacken motor mounting plate nuts (C), see illustration below.
- d Slacken the adjuster enough to push motor mounting plate fully down in the slots.
- e Remove lower pulley centre bolt and washer (D).
- f Remove the top pulley by taking out the 2 grub screws (E) from the taperlock bush and using one of them to loosen the pulley by inserting into the third tapped hole (F).
- g Remove the vee belts and remove the bottom pulley in the same manner as (F) above.
- h Exchange the pulleys on the taper lock bushes and loosely fit the 2 grub screws (E).
- i Replace the lower taper lock bush and pulley on to the rotor shaft, being careful not to displace the drive key. **Replace and fully tighten centre bolt before tightening the grub screws holding the taper lock. Failure to do this may result in the bearing rotating on the shaft journal.**
- j Replace vee-belts at the same time as replacing the top taperlock bush and pulley. With a straight edge line up top and bottom pulleys and fully tighten grub screws. Check pulley alignment and repeat if not aligned correctly.
- k Tension drive belts - see paragraph 9.



11 TELESCOPIC ARM

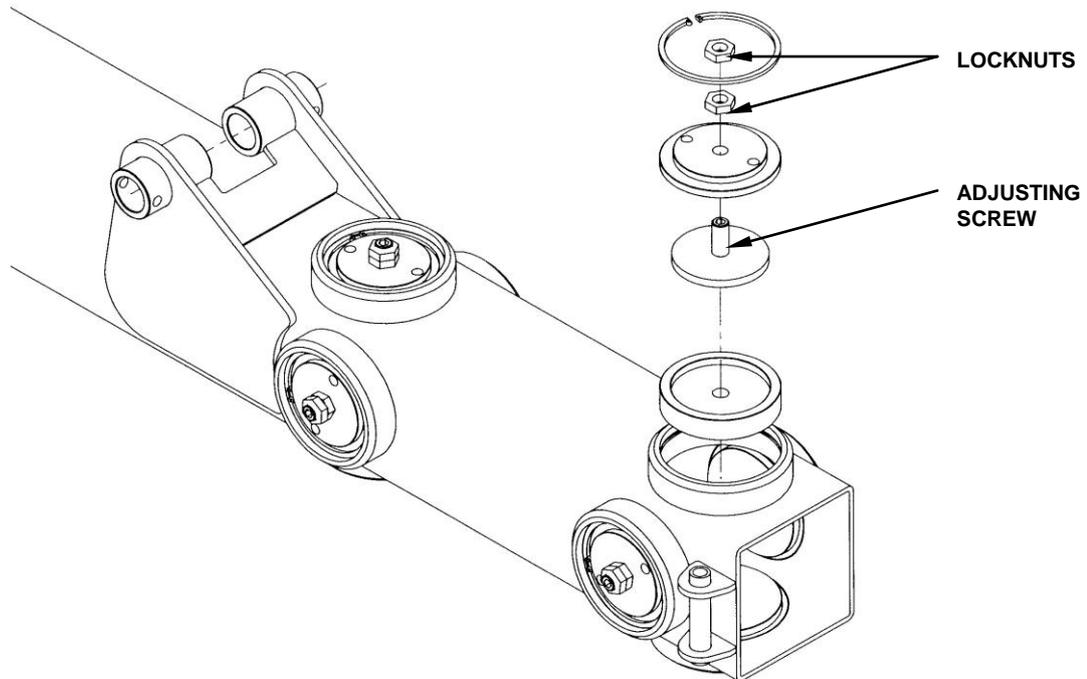
When necessary the wear pads in the telescopic arm assembly can be adjusted to alleviate any excessive slack or play between the inner and outer arm. The desired clearance between the inner arm and the wear pads is 0.5mm. Also ensure that the inner arm is parallel inside the outer arm.

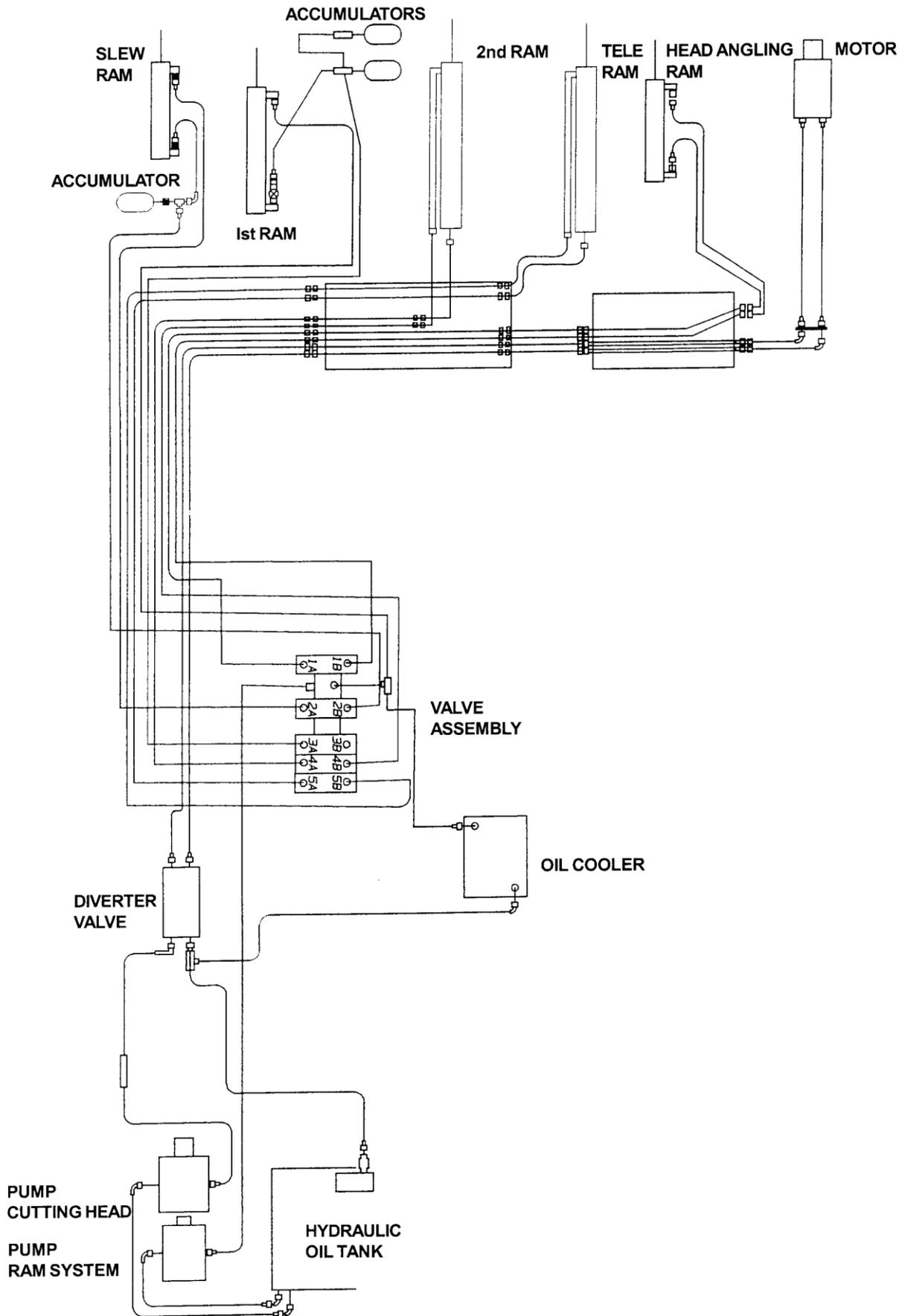
Adjustment can be achieved by slackening the locknuts and turning the adjusting screw. When the desired clearance between the pad and inner arm has been set retighten the locknuts.

Extra caution should be used when operating the machine after an adjustment has been made to the wear pads in case they have been over adjusted.

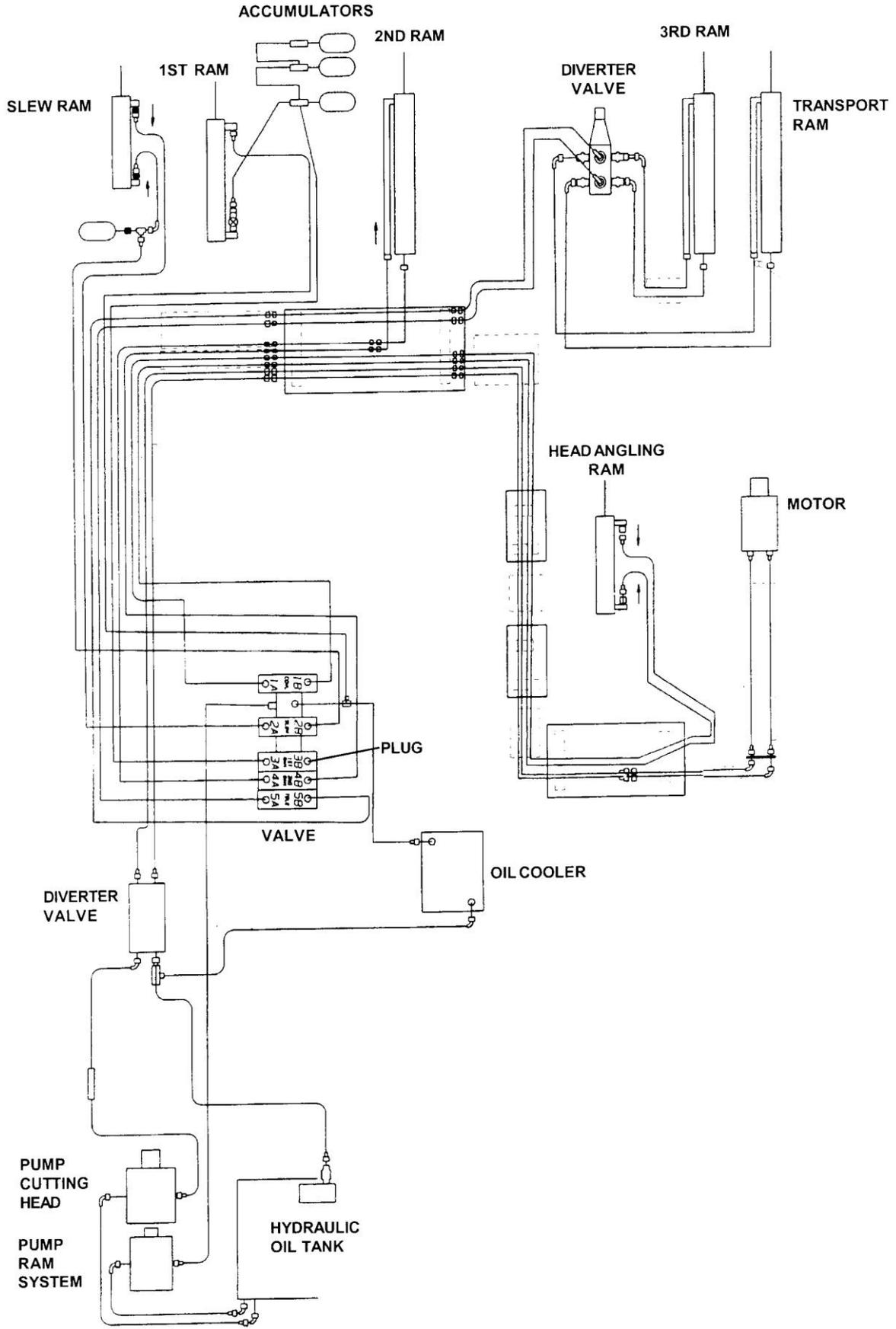
Annually coat the inner arm with black Waxoil Original or a similar product.

Do not lubricate the inner arm or the wear pads.

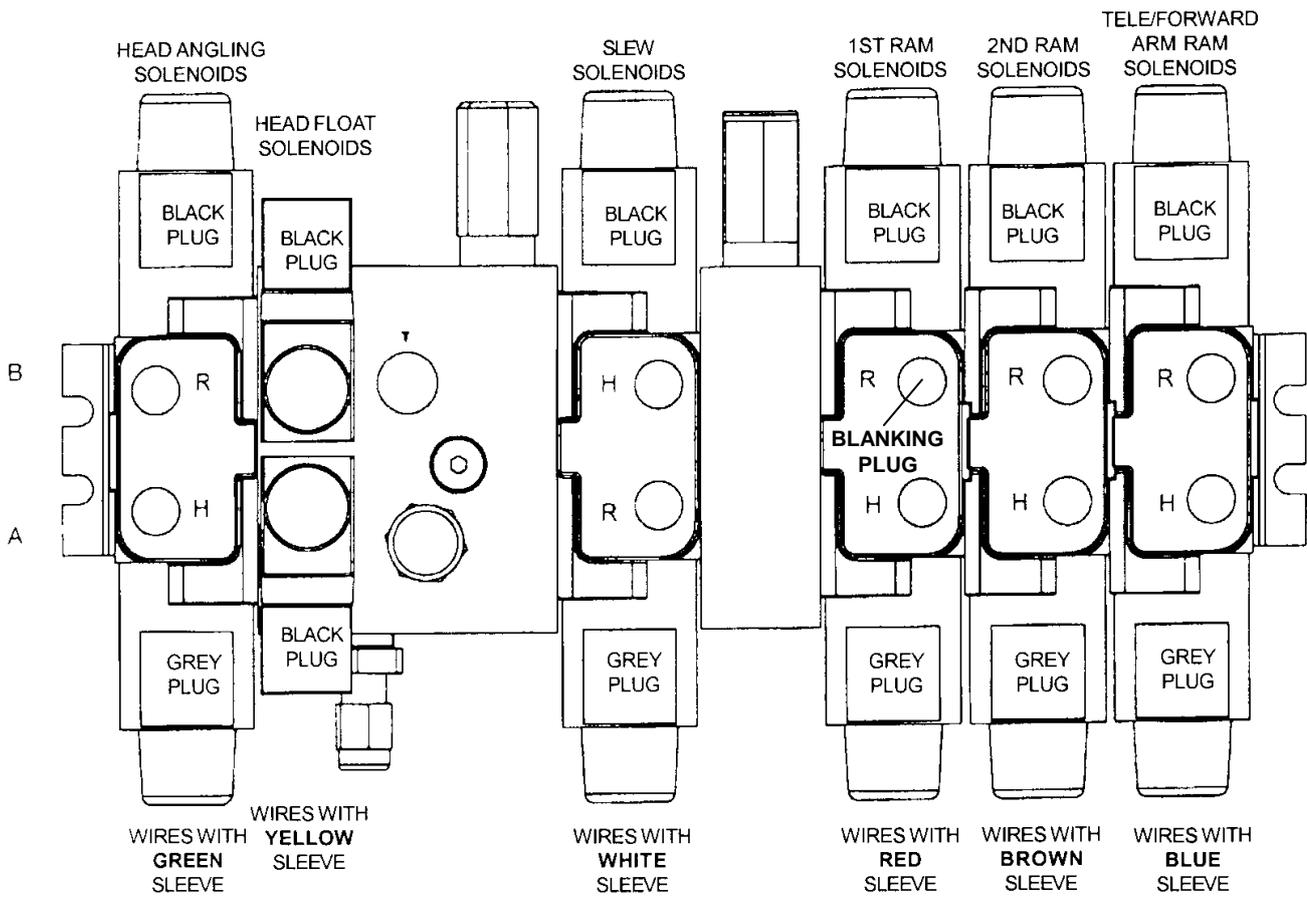




HYDRAULIC CIRCUIT



HYDRAULIC CIRCUIT - 3 ARM MACHINES



WIRING FOR 5 SERVICE VALVE