



ENTERPRISE 2000

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RICHARD PEARSON

ENTERPRISE PLUS

The contents of this manual although correct at the time of publication, in accordance with the company's policy of continuous improvements, alterations may be made to the specification of, or equipment on, its machines at any time without prior notice and without obligation in respect of machines already manufactured. All data given in this publication is subject to product variations. All weights and dimensions are approximate since certain machine settings whilst in use can influence overall measurements. Illustrations do not necessarily show machines in standard form. If the machine is found to be at variance with this manual, either by the addition of attachments or for other reasons, you must consult RICHARD PEARSON Ltd.

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1.1 INTRODUCTION

Introduction to the Manual.

Throughout this manual there are WARNING notes. These notes are used to indicate that the procedures being described must be followed to avoid possible death or injury to the operator or others. These notes are also used to prevent damage to the machine due to unsafe working practice.

The contents of this manual are intended as a guide to the operator and maintenance of the machine. It is **NOT** a training manual.

If there are any doubts whatsoever about any aspect of the machine's capabilities, servicing or operation procedures, you **MUST** consult an officially appointed RICHARD PEARSON Ltd dealer prior to commencing any operation of the machine.

Only trained operators should use this machine. It is the responsibility of the machine owner/s to ensure that any operators are properly trained. For details of training courses consult your appointed RICHARD PEARSON Ltd dealer.

This manual should be kept in a clean and good condition. It should be available at all times for the use of the operator, who must read thoroughly, and understand the information and advice given before attempting to operate, or carry out any maintenance or adjustments to the machine. Additional copies of this manual are available from your officially appointed RICHARD PEARSON Ltd dealer

Throughout this manual the term front, rear, right hand (R.H.) and left hand (L.H.), are derived from the tractor driver's operating position whilst facing forward in the normal direction of travel when the machine is in work.

The tremendous variations in operating conditions make precise setting instructions difficult. Use the advice given as a general guide, judging the correctness of the settings by the finished results. As weather and soil conditions change so the setting of your machine may need to be adjusted.

Adjustments may need to be made singly, or in combination, according to the working conditions. Always allow the machine to settle to these new settings before judging the results.

The dimensions of the machine can change when certain attachments are fitted or removed.

If any modifications are carried out to the machine, make sure that it remains within the specification shown on the machine identification plate.

1.2 INTRODUCTION

WARRANTY TERMS AND CONDITIONS

1. Every effort has been made by the manufacturers to ensure that the highest quality materials and workmanship are used in the production of your machine. In the unlikely event of a failure in any part of the machine **through defective materials or workmanship** within 6(six) months of the date of delivery, the part must be returned to our premises at Freiston, where, at our discretion, the defective part may be replaced or repaired free of charge.
2. We give no other warranty, condition, description or representation to be taken to be given or implied from anything said or written in the negotiations between the parties or their representatives prior to the date of the Contract for purchase; any statutory or other warranty, condition or description express or implied as to the state of fitness of the machine is hereby expressly excluded.
3. The Manufacturer's liability only extends to repair or replacement of parts proven to be defective in their manufacture, and the Company will not be liable for any consequential or other loss, damage or injury of any kind howsoever arising.
4. Items not covered by this assurance and considered to be the customer's responsibility are: normal maintenance service, replacement of service items, replacement required due to abuse, accident, misuse or improper operation, and normal replacement of wearable items e.g. pins, bushes, bearings, stars, webs, rollers, etc.
5. Any part repaired or replaced under this assurance will be covered for the balance of the machine assurance period.
6. This assurance is given to the first owner and may be transferable with the written consent of RICHARD PEARSON Ltd for the balance of the machine assurance period.
7. The installation and Warranty Registration Document must be filled in correctly and returned to the manufacturer within 7 days of the sale date. Failure to do so may result in subsequent claim rejection.
8. Tyres and tubes are not covered by this assurance, but are covered by the tyre manufacturer's own warranty system which provides against defects in material or workmanship.
9. All defective parts replaced must be returned by the Distributor to the Manufacturer, together with a correctly completed Warranty Claim Form within 28 days after completion of work. Any delay may cause the claim to be rejected. In the event of a rejection of the claim by the manufacturer, the parts will be destroyed unless specific disposal instructions were given with the claim.
10. No claim will be considered if other than genuine RICHARD PEARSON Ltd parts are used to effect a repair, or if lubricants other than those recommended by RICHARD PEARSON Ltd are used.
11. The manufacturer's policy is one of continuous improvement. RICHARD PEARSON Ltd reserve the right to change the specification without notice. No responsibility will be accepted for discrepancies which may occur between specifications of machines and the descriptions contained in publications.

1.3 INTRODUCTION

MACHINE IDENTIFICATION

Please record the following information in the spaces provided below. Always quote the serial number when ordering spare parts. The serial number can be found on the identification plate, (fig 1.1) which is situated on top of the headstock.

MODEL/YEAR.....

SERIAL NUMBER.....

DATE OF DELIVERY.....

DATE STARTED WORK.....

OPTIONAL ATTACHMENTS FITTED.....

.....

.....

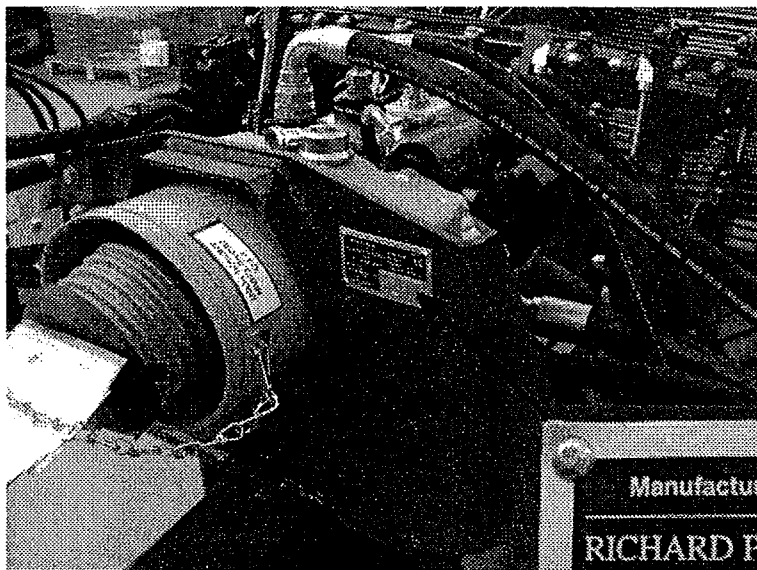
.....

DEALERS NAME AND ADDRESS.....

.....

.....

.....



Manufactured by:-		Priory Road,	CE
RICHARD PEARSON		Freiston,	
LIMITED		BOSTON, Lincs.	
Tel: 44 (0) 1205 760383		ENGLAND PE22 0JZ	
MODEL/TYPE			
YEAR OF MANUFACTURE			
SERIAL NO.			
UNLADEN WEIGHT (BASE MACHINE)	kgs		

Fig 1.1

2.1 - HEALTH AND SAFETY

PTO Shaft

The fitting and maintenance of correct and adequate PTO shafts and guards is a legal requirement.

All the parts of the PTO shaft, especially the guards, must be kept in good order. Check regularly that the guard is undamaged and fully protects the whole of the shaft, and that both the guard and the shaft will telescope freely.

The machine is designed to be run on the tractor's 6 spline PTO output shaft, and to run at the required operating speed (see section 3.2). Consult your RICHARD PEARSON Ltd dealer if further details on this subject are required.

Make sure that the drive shaft is fitted correctly and that the lock pins are engaged.

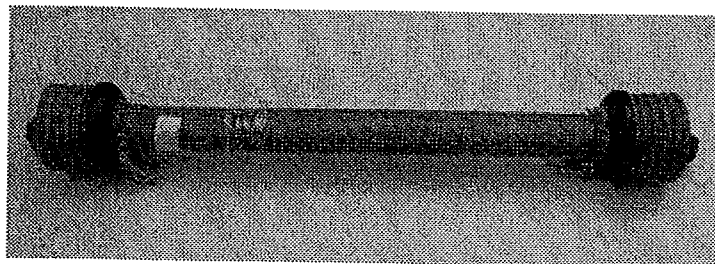
If it is possible to engage the inner and outer parts of a drive in more than two positions circumferentially then make sure that the universal joint yokes are correctly aligned.

Check that when in the continuous working position, the drive shaft is not at an angle of more than 20° from the PTO centre line. The angle between the drive shaft and the input and output shafts should be equal.

Ensure that the chains or ropes, used to prevent the guards from turning, are fixed to the tractor and implement in such a way that they will not be stretched when the drive shaft is at maximum articulation.

After uncoupling from the tractor the PTO shaft must be stored in a professional manner, ensuring that the shaft halves do not become disengaged, and that no damage can occur to the shafts or guards. The safety chains fitted to the guard must not be used to support it.

For stationary machines, make sure that the tractor and machine cannot move apart so that the two halves of the drive shaft become disengaged.



2.2 - HEALTH AND SAFETY

Hazard Warnings

BEFORE ATTEMPTING TO CLEAR ANY BLOCKAGE, CARRY OUT ANY REPAIRS OR MAINTENANCE, THE MACHINE MUST BE STOPPED. ALWAYS DISENGAGE PTO DRIVE, SWITCH OFF TRACTOR, REMOVE IGNITION KEY AND UNPLUG DRIVER'S CONTROL BOX AT THE TRACTOR POWER SUPPLY BEFORE COMMENCING ANY WORK ON THE MACHINE.

Ear protection must be worn when noise levels exceed 85dBA.

When working in dry conditions, heavy airborne particles will be present. It is the responsibility of the owner/operator to ensure that the correct, suitable, protection be worn by the operator.

Safety guards are designed for the protection of yourself and others. Always ensure they are in position, in good repair and securely fastened by their correct means before operating the machine.

Drive chains or webs should only be fitted while the sprockets are stationary. Do not use a rotating sprocket to feed a drive chain into position.

Always securely support any raised part of the machine before attempting any work either on or under it.

People's movements, especially children, are unpredictable. Always ensure the working area around the machine is clear at all times, particularly before making any turning or reversing manoeuvres.

Make sure everyone near the machine is fully aware of your intentions before moving off or operating any function on the machine.

Keep the machine adequately maintained. Loose or damaged parts are dangerous when the machine is in operation.

This machine is not equipped for carrying passengers. Do not allow ANYONE to ride on it. When an officially approved Richard Pearson picking off table is fitted, consult the options section for details regarding operational instructions.

Always obtain advice from your lubricant supplier before mixing oils, some are incompatible.

Liquids used in this machine are harmful if taken internally or splashed on the skin. In the event of accidentally swallowing oil, grease, chemicals etc. DO NOT encourage vomiting, but OBTAIN QUALIFIED MEDICAL ASSISTANCE IMMEDIATELY.

Inflating or servicing tyres can be dangerous. Whenever possible trained personnel should be called in to service or install tyres. In any event, to avoid the possibility of serious or fatal injury, safety precautions must be followed.

Never attempt tyre repairs on a public road or highway.

2.3 - HEALTH AND SAFETY

Hazard Warnings

Do not re-inflate a tyre that has been run flat or seriously under-inflated until it has been inspected for damage by a qualified person.

Do not inflate a tyre above the manufacturer's maximum pressure shown on the tyre. If the bead does not sit on the rim by the time this pressure is reached, deflate the tyre, re-lubricate the bead with soap/water solution and re-inflate. Do not use oil or grease. Inflation beyond the maximum pressure with unseated beads may break the beads or rim with sufficient explosive force to cause serious injury.

After seating the beads, adjust the inflation pressure to the recommended operating pressure.

Never hit a tyre or rim with a hammer.

Ensure the rim is clean and free of rust or damage. Do not weld, braze, or otherwise repair or use a damaged rim.

When fitting a new or repaired tyre, use clip-on valve adapter with a remote gauge that allows the operator to stand clear of the tyre whilst inflating.

Do not inflate a tyre unless the rim is mounted on the machine, or is secured so that it will not move if the tyre or rim should suddenly fail.

Care must be taken when carrying out any work on the hydraulic system. Even though the machine is stopped and completely disconnected from the tractor, there will still be residual pressure within the machine's hydraulic system. Before commencing any work on the hydraulics, ensure that the system is free of any residual pressure by carrying out the residual pressure dump procedure in section 10.3. Never leave the machine unattended with pressure in the hydraulic system.

Always wear correctly fitting protective clothing. Loose or baggy clothing can be extremely dangerous when working on or in close proximity to a machine.

Never allow unqualified personnel to attempt to remove or replace any part of the machine, or allow anyone to remove large or heavy components without adequate lifting equipment.

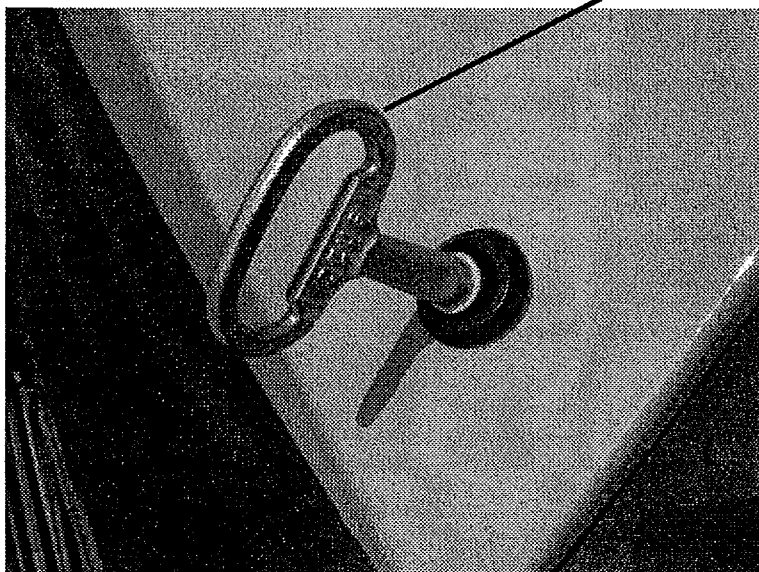
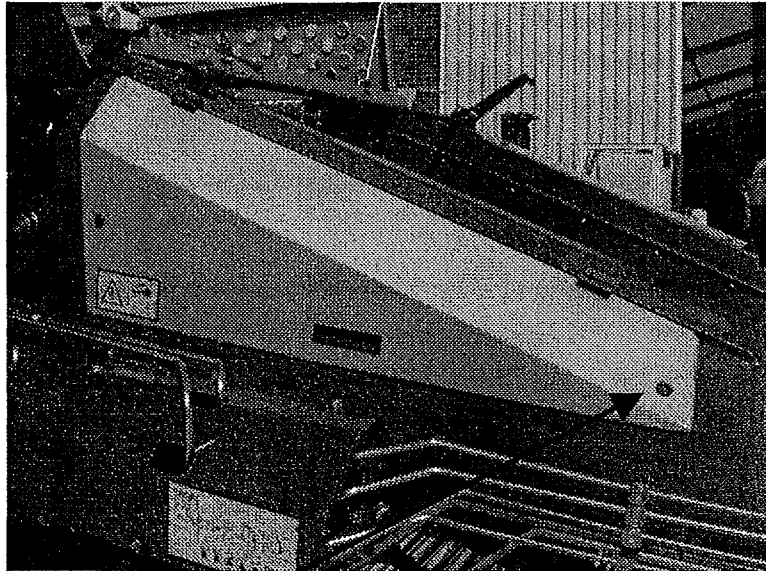
Owners and operators are reminded that when machines over a certain width are towed on public roads in the UK, restricted speed limits apply. Owners of high speed tractors MUST pay particular attention to this.

Police notification may be required for some journeys, subject to local requirements.

2.4 - HEALTH AND SAFETY

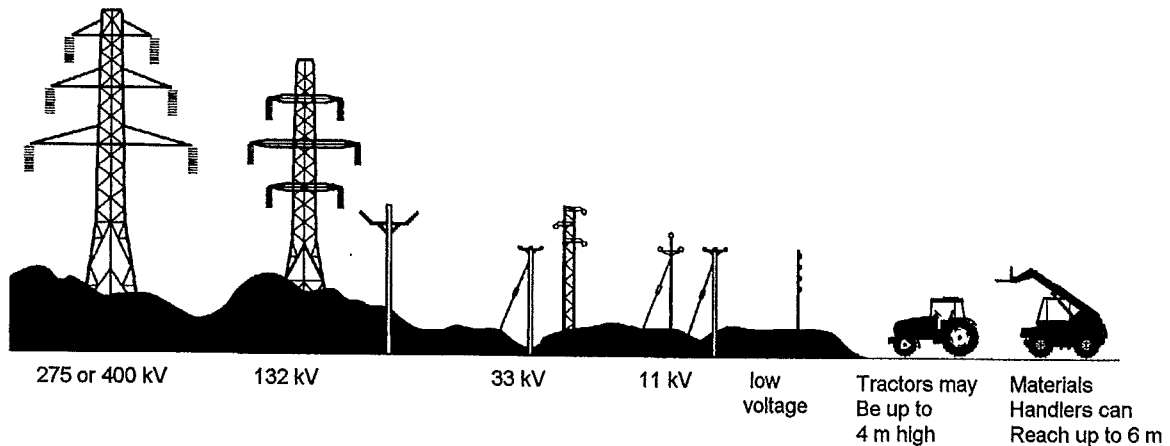
GUARDS

All guards fitted to the machine are locked by means of a special key which is supplied with the machine. These guards must be closed and securely locked with the key before operating this machine.



2.5 - HEALTH AND SAFETY

Extracts from H.S.E. information sheet 'WORKING SAFELY NEAR OVERHEAD POWER LINES' 'Agriculture sheet No.8'



Introduction

About five people are killed every year in accidents involving overhead power lines during agricultural work. Machinery (e.g. combines, tipping trailers and loaders); equipment (e.g. irrigation pipes and ladders); and activities (e.g. stacking) are often involved. Contact with the lines does not need to be made. Electricity can flash over when machinery or equipment gets close to overhead lines.

Most incidents involve high-voltage lines supported on wooden poles, but the dangers of other power lines cannot be ignored. This information sheet outlines the steps you can take to reduce the risks when working near overhead power lines. Remember the Electricity at Work Regulations 1989 apply to work activities carried out near power lines.

Planning precautions

Consult your local electricity company. They will provide free information and advice about precautions and safe working procedures which can be followed near power lines.

Find out the maximum height and maximum vertical reach of your machines and those used by contractors.

Find out the routes of all overhead lines on your land or near your boundaries. Mark them on the farm map. The electricity company will give you this information.

Make sure you have information about all the lines on your land - if not, contact the owners of those lines.

The farm map can be used as a reference when planning cropping or other work, instructing machine operators and contractors, or buying new equipment. In cases where there is a significant risk area, it is sensible to discuss the following measures with the electricity company:

- **access:** creating alternative access points and routes - this is often the cheapest option;
- **divert lines:** benefits can arise from burying lines or changing routes - an option particularly suited to farmyards;
- **barriers and goal posts:** by erecting goal posts and barriers, machines which have to pass beneath lines can be limited to a safe height - an option especially suited to gateways and tracks.

Working safely

Key elements of safe systems of work are:

Training

Everybody who works near overhead power lines with a machine or equipment needs to know what the dangers of overhead lines are and the precautions to follow.

2.6 - HEALTH AND SAFETY

Visitors

Contractors are at risk when they work on farms where overhead lines are present. Make sure they know where the lines are and tell them the precautions they need to take. Routes can be marked with safety signs to warn all visitors of the dangers.

Use of machinery

Accidents can be avoided if the following operations are not carried out within a horizontal distance of at least 9 m from power lines on wooden poles or at least 15 m of lines on metal towers:

- *stacking bales or potato boxes;*
- *folding sprayer booms;*
- *tipping trailers or lorries;*
- *operating materials handlers;*
- *working on top of combines or other high machinery.*

Risks can be reduced by:

- *using sprayers with horizontally folding booms;*
- *taking care not to damage poles and stays;*
- *making sure machinery can operate safely near any overhead lines;*
- *fitting shorter radio aerials to high machines so they cannot cause danger;*
- *carrying irrigation pipes horizontally using two people and not storing pipes near power lines.*

EMERGENCY ACTION IN THE EVENT OF AN ACCIDENT

- *Never touch an overhead line - even if it has been brought down by machinery, or has fallen. Never assume lines are dead.*
- *When a machine is in contact with an overhead line, electrocution is possible if anyone touches both the machine and the ground.*
- *If you need to get out to summon help or because of fire, jump out without touching any wires or the machine. Keep away.*
- *Get the electricity company to disconnect the supply. Even if the line appears dead, do not touch it - automatic switching may reconnect the power.*

Further advice

*For further advice and information contact your local electricity supply company. You can also get advice from the Farm Energy Centre, National Agricultural Centre, Stoneleigh Park, Warwickshire CV8 2LS (Tel: 01203 696512). To obtain the latest edition of their handbook *Safe use of electricity in farming and horticulture* (FEC 2100: 3rd edition 1992), send them a cheque for £2.50 made payable to Farm Energy Centre.*

Further reading

Avoidance of danger from overhead electrical lines

GS 6 (rev) HSE Books 1991 ISBN 0 11 885668 5

Farm Electric The safe use of irrigators and slurry guns near overhead electric power lines Electricity Association Technology Ltd. Available free from the Farm Energy Centre, National Agricultural Centre, Stoneleigh Park, Warwickshire CV8 2LS

Memorandum of guidance on the Electricity at Work Regulations 1989 HSE Books 1989 ISBN 0 11 883963 2

Management of health and safety at work. Management of Health and Safety at Work Regulations 1992. Approved Code of Practice HSE Books 1992 ISBN 0717604128

An HSE video called Shock horror is available for purchase or hire from CFL Vision, PO Box 35, Wetherby LS23 7EX (Tel: 01937 541010).

HSE priced and free publications are available by mail order from HSE Books, PO Box 1999, Sudbury, Suffolk CO10 6FS. Tel: 01787 881165 Fax: 01787 313995.

HSE priced publications are also available from good booksellers.

For other enquiries ring HSE's InfoLine Tel: 0541 545500, or write to HSE's Information Centre, Broad Lane, Sheffield S3 7HQ.

HSE home page on the World Wide Web: <http://www.open.gov.uk/hse/hsehome.htm>

2.7 - HEALTH AND SAFETY

Extracts from H.S.E. information sheet 'SAFE USE OF POTATO HARVESTERS' 'Agriculture sheet No.13'

Introduction

This information sheet outlines the key dangers common to most potato harvesters. It also lists essential Do's and Don'ts for the safe operation of these machines.

A study of accidents investigated by H.S.E. showed that 11 people were killed and 121 seriously injured when working with potato harvesters between 1988 and 1996.

Five people died and seven were seriously injured when they were run over by potato harvesters.

Ninety-seven people injured arms or legs when caught in haulm or cleaning rollers. These accidents often caused amputations.

All users of potato harvesters need to identify the hazards caused by their harvesters and make sure all those working with these machines know and follow safe working practices to prevent accidents and serious injuries.

Key dangers

Injuries are caused by:

- *getting caught in haulm and cleaning rollers;*
- *harvesters and tractors running over people;*
- *falling from access ladders and platforms;*
- *getting caught in conveyors or elevator chains;*
- *getting caught by the drive mechanisms;*
- *getting wrapped around the power take-off (PTO) shaft;*
- *failing to switch off all power sources;*
- *handling bags of potatoes;*
- *poor working positions causing back strains etc.*

Do's and Don'ts

Do:

- *make sure everyone working on the harvester has understood the safety instructions in the handbook;*
- *provide the operator with clear instructions on the safe way to clean the harvester of haulm, stones, potatoes etc;*
- *agree a system for communicating between the platform and the tractor driver, e.g. sound the horn before starting the engine, reversing or engaging drives;*
- *check that all haulm, clod and cleaning rollers are properly guarded. Fit additional guards if anyone can reach the rollers with arms or legs from any position. Manufacturers can help with guard kits;*
- *fit an alarm or stopping device on the platform;*
- *make sure you and any of your employees, relief drivers and contractors are properly trained in the safe use of the potato harvester and have read this sheet;*
- *remember that putting the PTO out of gear will not cut the power to some hydraulically driven components;*
- *take particular care when reversing; make sure you can see what is behind or seek assistance if the view is obscured;*
- *stop the tractor engine and pocket the ignition key before you carry out any work on the potato harvester;*
- *make sure all guards are in position and correctly fitted before starting work;*
- *stop the engine before anyone clears a blockage;*
- *stop the tractor before anyone gets on or off the harvester.*

2.8 - HEALTH AND SAFETY

Don't:

- reach into the potato harvester unless all drives are stopped;
- climb over harvesters;
- jump on or off the harvester when it is moving;
- leave the driving position of a moving or running tractor;
- work under box handling attachments without using the supports provided;
- carry out maintenance with the tractor engine running;
- run the harvester with the guards raised or removed;
- allow children on or near the harvester.

General guidance

Take care when working in difficult conditions or those with weed or haulm problems - don't overload the machine. Remember that avoiding blockages is easier than clearing them. Use drive reversing mechanisms when fitted and encourage the use of conveyor controls to optimise picking conditions.

Make use of relevant training courses such as those run by ATB Landbase, manufacturers and dealers. They will help to ensure the safe and efficient use of your potato harvester.

Further information

H.S.E. priced and free publications are available by mail order from:

H.S.E. Books, PO Box 1999, Sudbury, Suffolk CO10 6FS Tel: 01787 881165 Fax: 01787 313995.

H.S.E. priced publications are also available from good booksellers.

For other enquiries ring H.S.E.'s InfoLine Tel: 0541 545500 or write to H.S.E.'s Information Centre, Broad Lane, Sheffield S3 7H0.

H.S.E. home page on the World Wide Web: <http://www.open.gov.uk/hse/hsehome.htm>

These 'Extracts from H.S.E. information sheets' contains notes on good practice which are not compulsory but which you may find helpful in considering what you need to do. The information they contain, is current at 3/97, and are reproduced with the permission of the HEALTH & SAFETY EXECUTIVE.

2.9 - HEALTH AND SAFETY

Transport

Owners and operators are reminded that when machines over a certain width are towed on public roads in the UK, restricted speed limits apply. Owners of high speed tractors **MUST** pay particular attention to this.

Police notification may be required for some journeys, subject to local requirements.

This machine must not be taken onto the public highway whilst carrying any form of load, or the statutory weights may be exceeded.

Before transporting this machine the following procedures should be carried out.

- A. Ensure the machine is level laterally, then close the transport lock valve situated near the top of the levelling cylinder (Fig 9.1 item 1).

Item 1

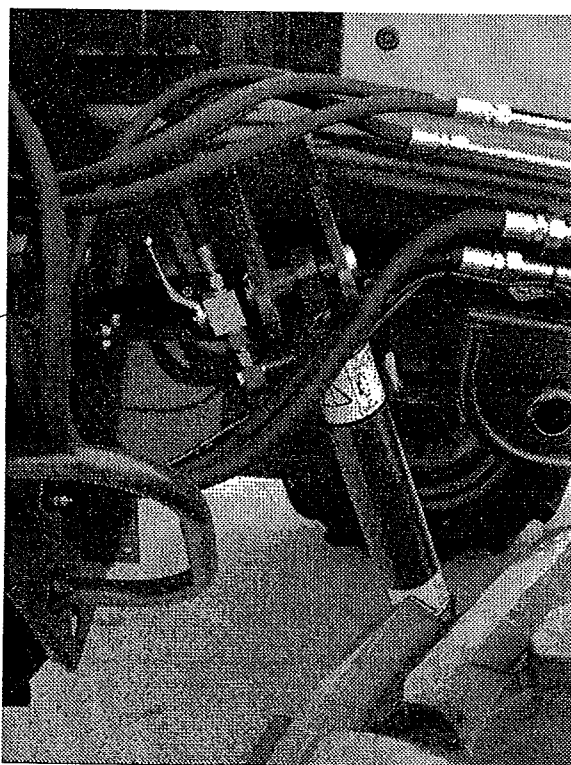


Fig 9.1

2.10 - HEALTH AND SAFETY

- B. Operate the share control (see section 4,) to raise the floating chassis, fit the transport chains (Fig 9.2) onto the hooks provided on the main chassis (Fig 9.2), both sides of the machine. Operate the share control again to lower the floating chassis so that its weight is supported onto the transport chains.

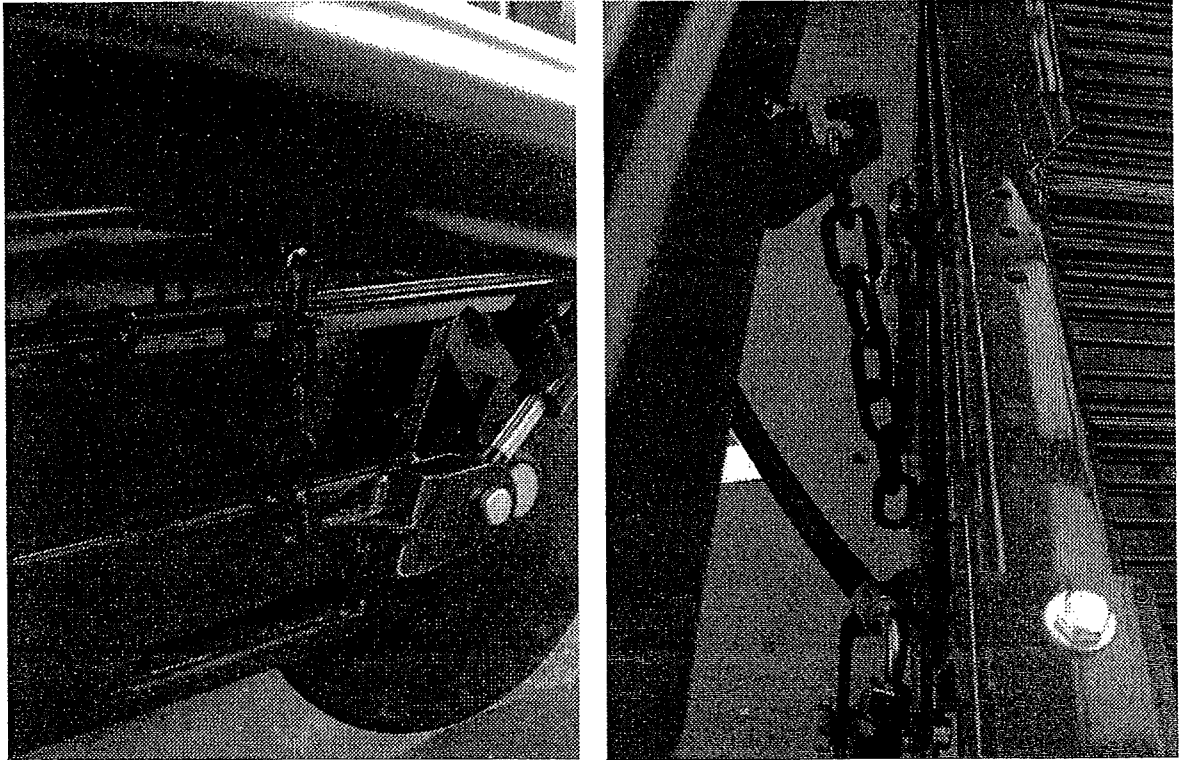


Fig 9.2

- C. Operate the elevator control (see section 4) to make sure that the cart elevator is fully and correctly folded.
- D. Operate the steering control (see section 4) to make sure that the land wheels are in the straight ahead position.
- E. Switch the power off on the drivers control box via the on/off switch (see section 4).
- F. If road lights are fitted, make sure they are clean, visible and working correctly.

3.1 - SPECIFICATION

Dimensions (BASIC MACHINE)

Length	Working	8.55	M
	Transport	8.55	M
Width	Working	6.25	M
	Transport	3.77	M
Height	Working	3.77	M
	Transport (standard)	3.54	M
	Transport (with lowering kit)	3.67	M
Weight		5.38	Tonnes
Cart elevator maximum height standard		5.28	M
With Easi-pic table fitted add to length		0.9	M
With In-line table fitted add to length		1.5	M
Axle in high position add to all heights		80	mm
Row widths	76 to 90 cm (30 to 36 inches)		
Tyre size (standard)	405 – 70/20	Trac-grip	
Tyre pressure	2.4 Bar	(34 p.s.i.)	
Wheel nut torque	M18 x 1.5	310 NM	
	M20 x 1.5	330 NM	

Hydraulic Requirements

Oil flow from tractor lift system (set to constant pump)	minimum	40 ltr/min
	maximum	70 ltr/min

(For flows greater than 70 ltr/min consult your officially appointed Richard Pearson dealer)

There must no restriction in this return oil. Ensure that there is a full flow return, or even better return straight back into the tractor gearbox. Consult your tractors hand book or dealer for further information.

Electrical Requirements

From tractor 30 amp	12V DC <u>NEGATIVE EARTH</u>	Fuse in power lead
------------------------	------------------------------	--------------------

3.2 - SPECIFICATION

Drive Requirements

From tractor PTO

6 spline x 1 3/8"

540 RPM maximum

For average condition, normal operating PTO speed is 440 rpm.

PTO SPEEDS GREATER THAN 540 RPM WILL CAUSE DAMAGE TO THE SYSTEM AND IF EXCEEDED MAY INVALIDATE ANY WARRANTY.

In accordance with RICHARD PEARSON Ltd policy of continuous improvements, alterations may be made to the specification of its machines at any time without prior notice and without obligation in respect of machines already manufactured. All data given in this publication is subject to product variations. All weights and dimensions are approximate.

4.1 - CONTROLS

Electrical connections

DO NOT use existing electrical sockets on the tractor as these will prove inadequate. Use only the connections provided with your machine.

NOTE: ONLY TRACTORS WITH NEGATIVE EARTH ELECTRICAL SYSTEMS MUST BE USED. CONSULT THE TRACTOR MANUFACTURER'S HANDBOOK FOR THIS INFORMATION.

The machine is supplied with a power supply lead (fig 4.1 item 1), consisting of a pre-wired plug, inline fuse, (rated at 30 amp continuous) and eyelets for connecting to the tractor supply. The lead should be connected, via a suitable route on the tractor, to either the starter solenoid or the main battery. The wire fitted with the inline fuse should be connected to the positive terminal on the starter solenoid or the main battery. The other wire should be connected to either the battery negative terminal, or to a suitable earth point on the tractor.

Mounted on the base of the driver's control box, (fig 4.1 item 2), on a plate, are two strong magnetic feet which allow it to be mounted to any convenient metal plate in the tractor cab.

Between the driver control box in the tractor cab and the machine is an electrical cable with two connections, (fig 4.1 item 3). One connector is the same as the power connector and matches a plug on the front electric connection box, (fig 4.1 item 4), the other is a rectangular multi pin plug which is connected to the electric connection box, (fig 4.1 item 4).

DO NOT apply excessive force to the plug connectors when connecting into the sockets otherwise damage may be caused.

If additional electrical equipment (working lights, camera kits, etc) are fitted to the machine, they must not be connected to the existing machine wiring loom.

Driver's control box

When the machine is being towed along public roads, the red on/off power button (fig 4.2 item 1) must be in the off position to avoid any risk of the control switches being accidentally activated.

4.2 - CONTROLS

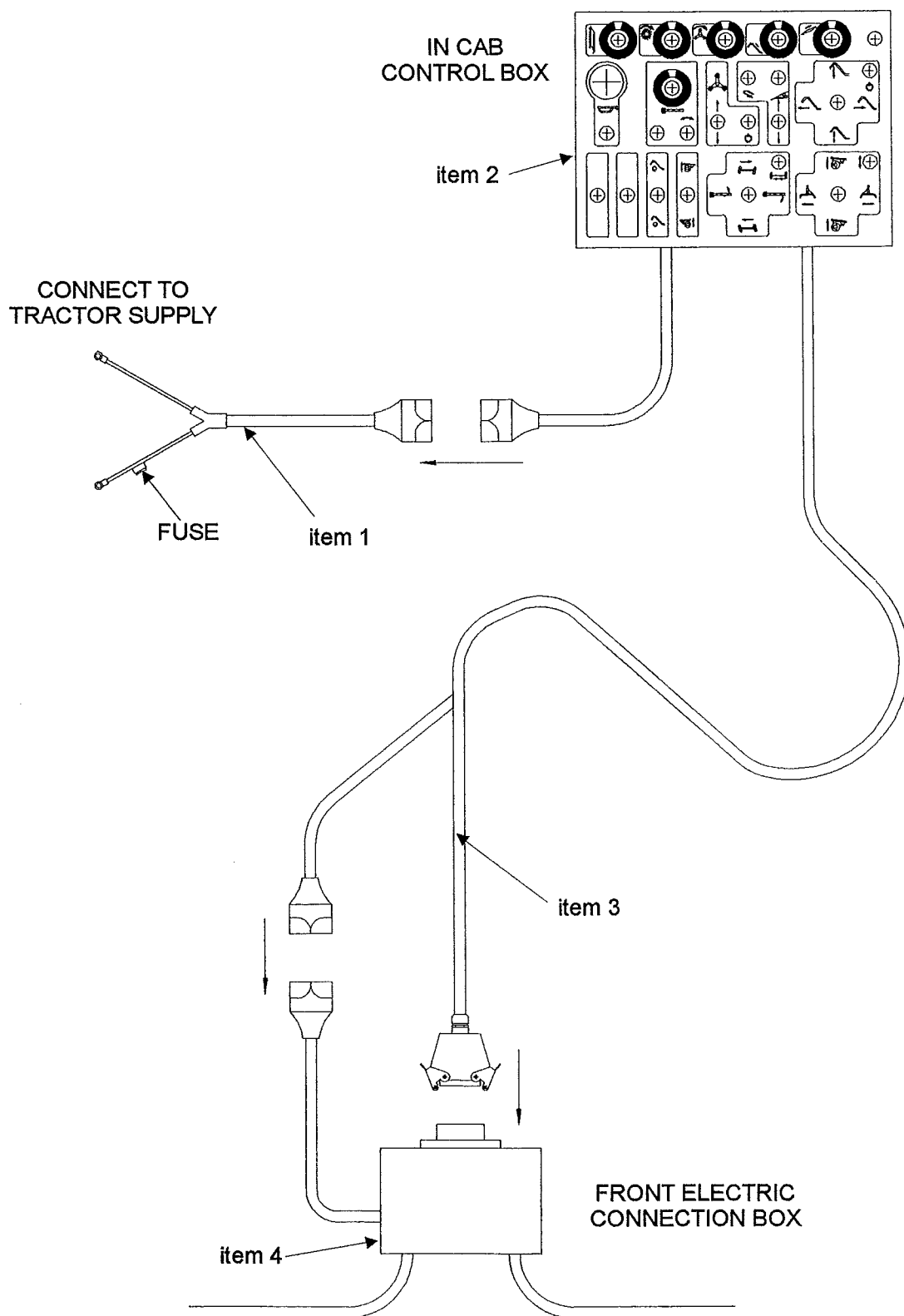


Fig 4.1

4.3 - CONTROLS

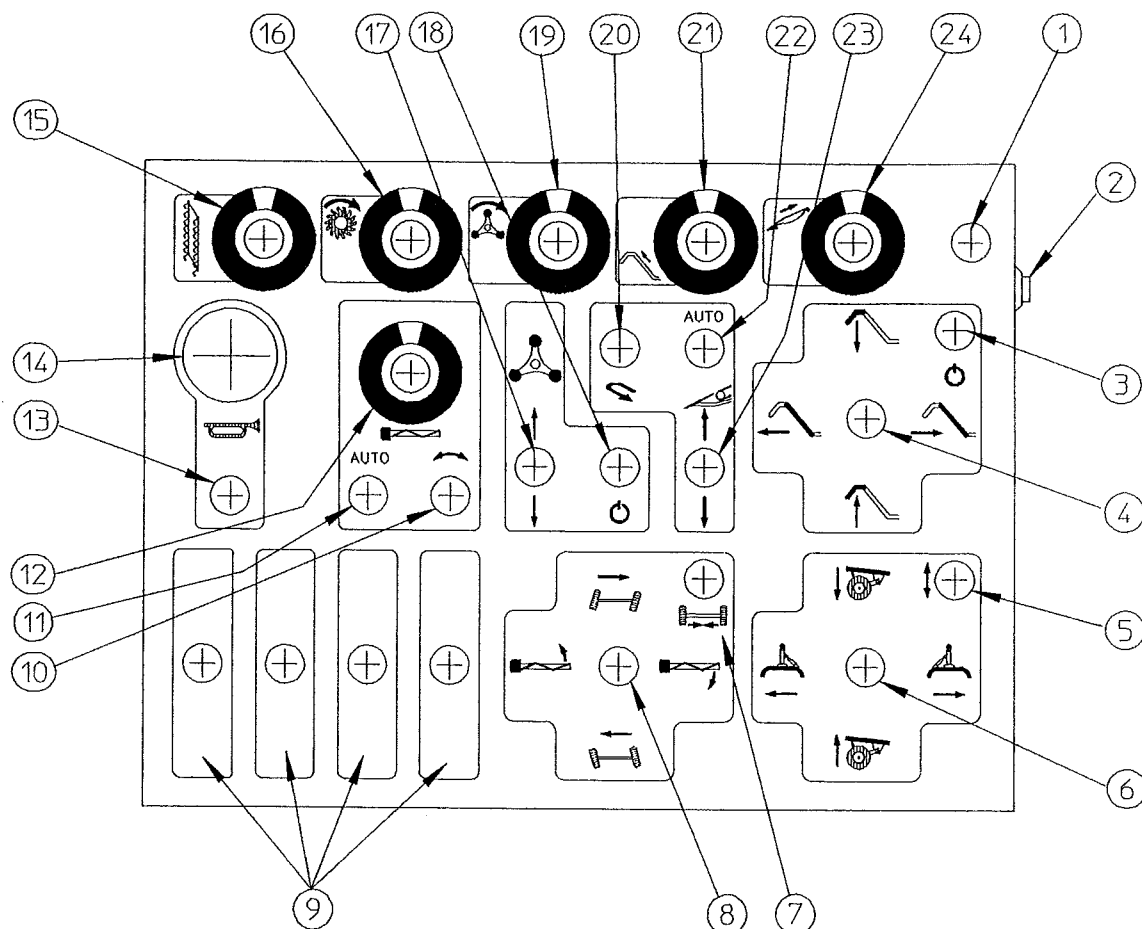


fig 4.2

- | | |
|---|---|
| 1. Electrical stop button | 13. Communication button |
| 2. Safety cut out switch | 14. Buzzer |
| 3. Elevator drive on/off | 15. Oscillator speed control (optional) |
| 4. Elevator movement control | 16. Starflow speed control |
| 5. Level leg auto ON/OFF (optional) | 17. Agitator amount control (optional) |
| 6. Lanes adjuster and levelling control | 18. Agitator ON/OFF |
| 7. Steering auto centre | 19. Agitator speed control |
| 8. Proclean angle and axle steering control | 20. Headland switch(not connected) |
| 9. Option control switches | 21. Elevator speed control |
| 10. Proclean manual reverse control | 22. Auto depth control ON/OFF |
| 11. Proclean auto angle control (optional) | 23. Manual share depth |
| 12. Proclean speed control (optional) | 24. Main web speed control |

4.4 - CONTROLS

Explanation of control switches (See fig 4.2 for layout of driver's control box).

1. ELECTRICAL 'E' STOP BUTTON

This button controls the electrical supply to the control box and is operated by twisting to turn ON and pushing down to turn OFF. WHEN OFF, ALL ELECTRICAL POWER TO THE ENTERPRISE ELECTRICAL CIRCUIT IS TURNED OFF.

2. SAFETY CUT OUT SWITCH

This is a safety cut out switch which protects the control box from over voltage. If volts rise above the correct level then the switch will pop out. By switching the power off this safety switch can be reset by pushing in until it latches in place. If the safety switch keeps cutting out then there is a problem in the electrical circuit that must be attended to.

3. ELEVATOR DRIVE ON/OFF

This control consists of one switch, a push button, which switches the hydraulic drive to the cart elevator ON or OFF. When the switch is in the ON position the switch is illuminated.

4. ELEVATOR MOVEMENT CONTROL

This control consists of one switch, a 4 position, spring centre joystick, which operates the hydraulic cylinders for the manual positioning of the cart elevator. Moving the joystick to the left or right will extend or retract the main section of the elevator, while moving the joystick up or down will operate the swan neck section of the elevator. When the joystick is released the cylinders will stay in that position.

5. LEVEL LEG AUTO ON/OFF (optional)

This control consists of a push button switch, which switches the automatic level control system ON or OFF (if fitted). When ON, the button is illuminated and the level of the machine is controlled automatically.

6. LANES ADJUSTER AND LEVELLING CONTROL

This control consists of one switch, a 4 position, spring centre joystick, which operates two separate functions, the hydraulic cylinders for the manual positioning of the drawbar lanes adjuster, and the chassis level leg.

Moving the control to the left or right will extend or retract the hydraulic cylinder which controls the manual position of the drawbar steering cylinder. When the switch is released the cylinder will stay in that position.

4.5 - CONTROLS

Moving the control up or down will extend or retract the hydraulic cylinder which controls the manual position of the chassis level leg cylinder. When the switch is released the cylinder will stay in that position.

7. STEERING AUTO CENTRE

This control consists of push button switch, which switches the auto centre ON. This will automatically return the axle to the straight ahead position at a single press.

8. PROCLEAN ANGLE AND AXLE STEERING CONTROL

This control consists of one switch, a 4 position, spring centre joystick, which operates two separate functions, the hydraulic cylinders for the manual positioning of the axle steering, and the manual positioning of the Proclean separator (if fitted).

Moving the control to the left or right will extend or retract the electric actuator which controls the manual position of the Proclean separator (if fitted). When the switch is released the actuator will stay in that position.

Moving the control to the up or down will extend or retract the hydraulic cylinder which controls the manual position of the axle steering cylinder. When the switch is released the cylinder will stay in that position.

9. OPTION CONTROL SWITCHES

These position in the control box are for switches, to suit the option that can be fitted to the enterprise harvester(see section 12 OPTIONS).

These can be:

Oscillator ON/OFF switch – two position toggle type switch

Auto axle level ON/OFF switch – two position toggle type switch

Auto proclean level ON/OFF switch – two position toggle type switch

Vari-web ON/OFF switch – two position toggle type switch

10. PROCLEAN MANUAL REVERSE CONTROL (optional)

This switch is a push button, and when pressed operates the auto reverse function of the Proclean. The Proclean will stay in reverse as long as the button is held.

4.6 - CONTROLS

11. PROCLEAN AUTO ANGLE CONTROL (optional)

This switch is a push button, which switches the automatic level control system ON or OFF (if fitted). When ON, the button is illuminated and the angle of the Proclean is controlled automatically.

12. PROCLEAN SPEED CONTROL (optional)

This is a rotary speed control for the Proclean separator drive. Turning the control will increase or decrease the speed of the rollers. This control is an option and will only work if fitted.

13. COMMUNICATION BUTTON

This button is the method of communication with the operators on the optional Picking Off Band. The communication buzzer control is a momentary contact push button switch, which when depressed will sound a buzzer in the tractor driver's cab and the P.O.B. control box. This will sound only for as long as the button is depressed. A system of communication between the tractor driver and the pickers should be adopted to prevent any misunderstanding of signals.

14. BUZZER

Audible buzzer

15. OSCILLATOR SPEED CONTROL (optional)

This is a rotary speed control for the Oscillator drive. Turning the control will increase or decrease the speed of the unit.

16. STARFLOW SPEED CONTROL

This is a rotary speed control for the starflow hydraulic drive. Turning the control will increase or decrease the speed of the unit.

17. AGITATOR AMOUNT CONTROL

This control consists of one switch, which is a self-centring toggle switch, that adjusts the optional actuator for positioning the agitator control rollers. Operating the switch up or down will increase or decrease the height of the control rollers giving more or less agitation.

18. AGITATOR ON/OFF

This control consists of one switch, a push button, which switches the hydraulic drive to the Agitator ON or OFF. When the switch is in the ON position the switch is illuminated.

19. AGITATOR SPEED CONTROL

4.7 - CONTROLS

This is a rotary speed control for the Agitator hydraulic drive. Turning the control will increase or decrease the speed of the unit.

20. HEADLAND SWITCH

THIS FUNCTION IS NOT CONNECTED.

21. ELEVATOR SPEED CONTROL

This is a rotary speed control for the Elevator hydraulic drive. Turning the control will increase or decrease the speed of the unit.

22. AUTO DEPTH CONTROL ON/OFF

This switch is a push button which switches the automatic depth control system ON or OFF. When ON, the button is illuminated and the position of the share arrangement is controlled automatically.

23. MANUAL SHARE DEPTH

This control is a self-centring toggle switch which controls the manual operation of the share position, up and down. When the switch is released the share stays in that set position.

24. MAIN WEB SPEED CONTROL

This is a rotary speed control of the main web hydraulic drive. Turning the control will increase or decrease the speed of the web.

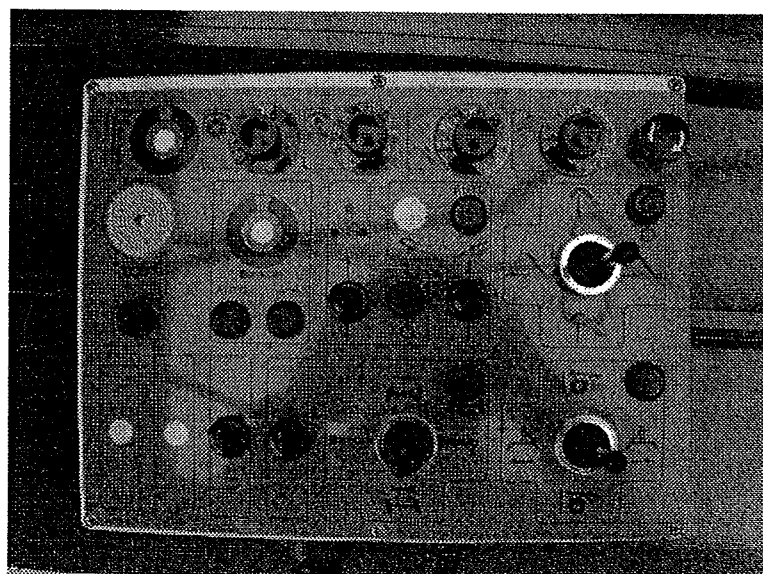


Photo of drivers control box

4.8 - CONTROLS

PICKING OFF BAND CONTROL BOX

See fig 4.5 for layout of picking off band control box.

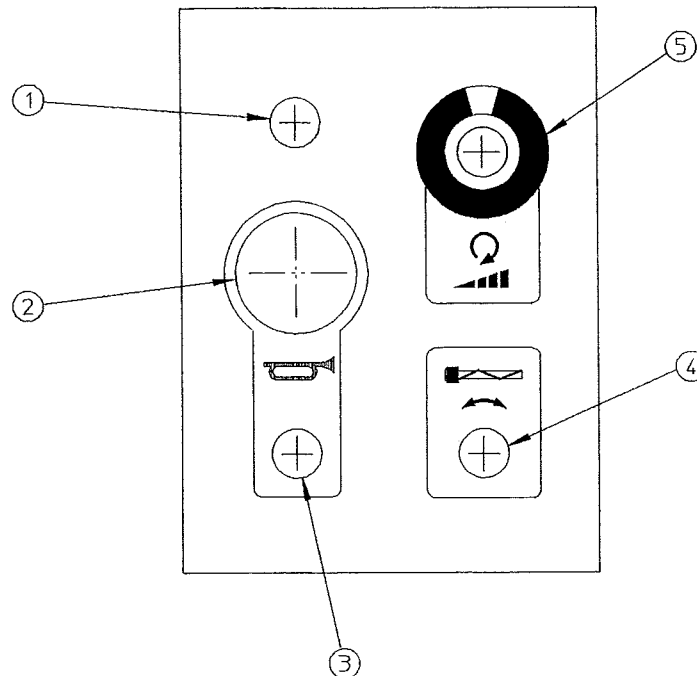


Fig 4.5

Connection

The P.O.B. control box has a lead that terminates in a multi pin plug. This is plugged into the electric box mounted on the rear left hand side of the main chassis, next to the proclean control box.

Mounted on the base of the P.O.B. control box is a strong magnet which allows it to be mounted to any convenient metal surface where the pickers are working.

Explanation of control switches

1. ELECTRICAL STOP BUTTON

This button controls the oil supply to the hydraulic drive to the picking off band, and is operated by twisting to turn ON and pushing down to turn OFF. When OFF the communication buzzer will sound continuously in the tractor driver's control box.

2 & 3. COMMUNICATION BUTTON

This button is the method of communication with the driver. The communication buzzer control is a momentary contact push button switch, which when depressed will sound a buzzer in the tractor driver's cab. This will sound only for as long as the button is depressed. A system of communication between the tractor driver and the pickers should be adopted to prevent any misunderstanding of signals.

4.9 - CONTROLS

4. PROCLEAN REVERSING CONTROL

This control consists of one push button switch, and when pressed operates the auto reverse function of the Proclean.

5. P.O.B. WEB SPEED

This is a rotary speed control for the POB hydraulic drive motors. Turning the control will increase or decrease the speed of the unit.

5.1 – ATTACHING TO TRACTOR

Chassis height adjustment

The levelling cylinder and support leg allow two operating heights for the main chassis. The high position being used when the Proclean separator module is fitted, and the low position is used with the Galaxy separator module.

The machine must be connected to the tractor drawbar before commencing with these adjustments

To adjust the chassis operating height, a trolley jack with a minimum lifting capacity of 2500 kg. is required. Place chocks at both the front and rear of the opposite side wheel to that being adjusted.

Jack up one side of the machine using the jacking point under the axle (see fig 5.1 item 1) until the wheel is clear of the ground. Place an axle stand with minimum capacity of 2500 kg. under a suitable part of the chassis. Adjust the jack until the lower retaining pin, of the levelling cylinder or support leg, is loose and can be removed.

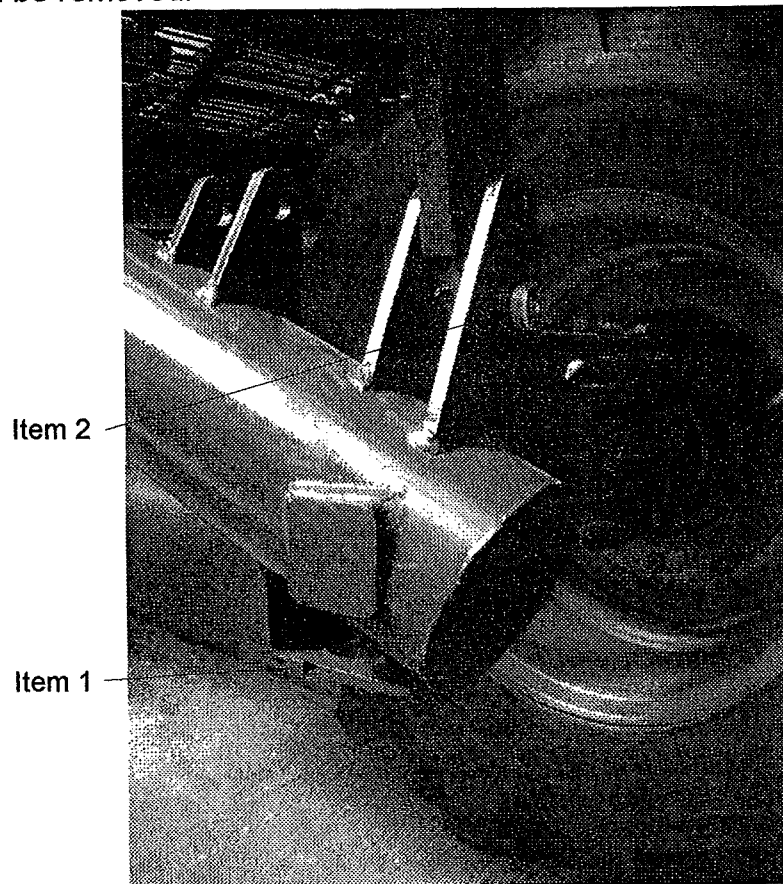


Fig 5.1

The axle can then be raised or lowered until the hole in the levelling cylinder or support leg aligns with the required hole in the axle attachment bracket (see fig 5.1 item 2), the retaining pin can then be replaced. Repeat this operation for the opposite side of the machine, ensuring that both sides are set to the same position.

5.2 – ATTACHING TO TRACTOR

Drawbar

The harvester drawbar is designed to be attached to the pick up hitch of the tractor.

Consult the tractor manufacturers handbook for details of the pick up hitch

The drawbar eye is adjustable for height to allow the machine to be set in a level working position. When in work, the top of the guard above the Galaxy star unit is to be level with the ground. To adjust, remove the two bolts attaching the eye to the drawbar (fig 5.2), and move the eye to the required position. If the required position cannot be achieved, the eye may be turned over to give a second range of adjustments. Refit and tighten the bolts.

Adjustment to the drawbar should only be carried out when the jackstand is down and the machine is disconnected from the tractor.

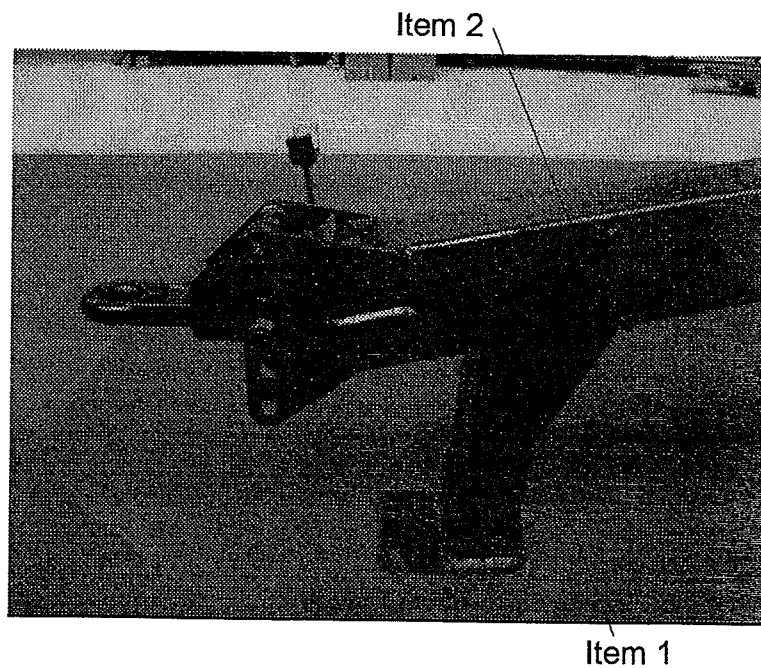


Fig 5.2

5.3 – ATTACHING TO TRACTOR

Jackstand

The jackstand is provided so that the machine is held at a suitable height for safely coupling to the tractor (fig 5.2 item 1).

Always ensure that the jackstand is positioned on firm ground in order to avoid the danger of the machine sinking or sliding whilst stood. Both wheels should be chocked at front and rear before removing from tractor.

When the machine has been securely attached to the tractor, the jackstand can be folded back into the stored position by removing the anchor pin that secures it. (Fig 5.2 item 2) Rotate the jackstand into the storage position and secure it with the original anchor pin.

DO NOT store the jackstand separately from the machine, you never know when it will be needed.

PTO Shaft

The harvester is designed to operate with the tractors 540 rpm, 6 spline, 1 3/8" PTO output shaft. For average condition, normal operating PTO speed is 440 rpm.

PTO SPEEDS GREATER THAN 540 RPM WILL CAUSE DAMAGE TO THE SYSTEM AND IF EXCEEDED MAY INVALIDATE ANY WARRANTY.

Fit the two halves of the PTO shaft onto their respective drive shafts on the machine and the tractor.

Check the shaft length by turning the tractor fully in both directions, whilst the machine is in its working position attached to the tractor's pick up hitch. Ensure the sliding tubes, when fully extended, have an overlap of at least half the closed length (Fig 5.3).

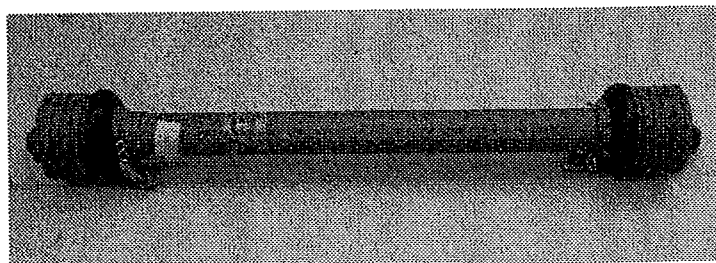


Fig 5.3

Ensure also that the ends of the sliding tubes, when at the shortest point are not in contact with other parts of the PTO shaft. If necessary, both tubes and guards must be shortened to achieve end clearance at the minimum length position.

5.5 – ATTACHING TO TRACTOR

Open/closed centre hydraulics

Two types of hydraulic system are currently in use by tractor manufacturers, namely OPEN CENTRE or CLOSED CENTRE configurations. Consult the tractor manufacturers handbook or your dealer for further information. The hydraulic valve on the harvester, mounted on the right hand side of the main frame half way along, (Fig 5.5) incorporates an end section (item 1) containing a screw which enables easy changing from closed to open centre and vice versa.

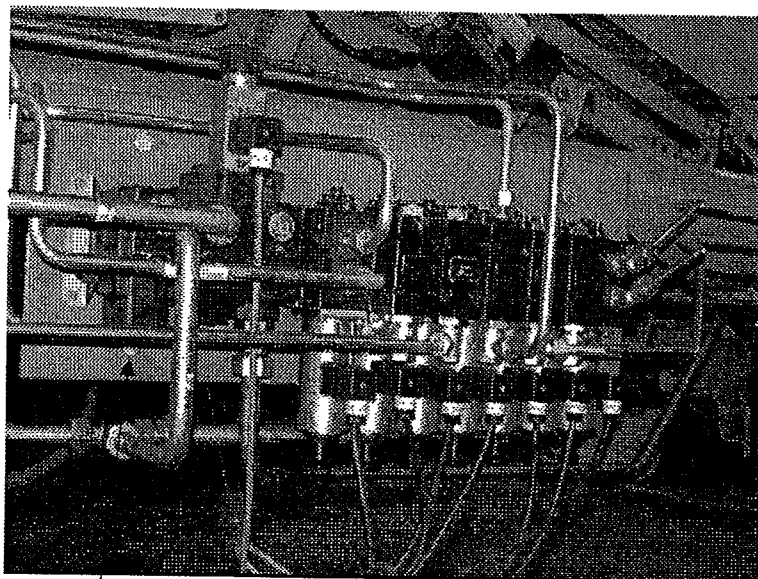


Fig 5.5

Item 1

The screw (Fig 5.6 item 1) is located in the lower face of the rear end section (Fig 5.5 item 1) of the hydraulic valve bank. For closed centre configuration tractors, turn the screw clockwise until fully closed. For open centre, turn the screw anticlockwise until fully out.

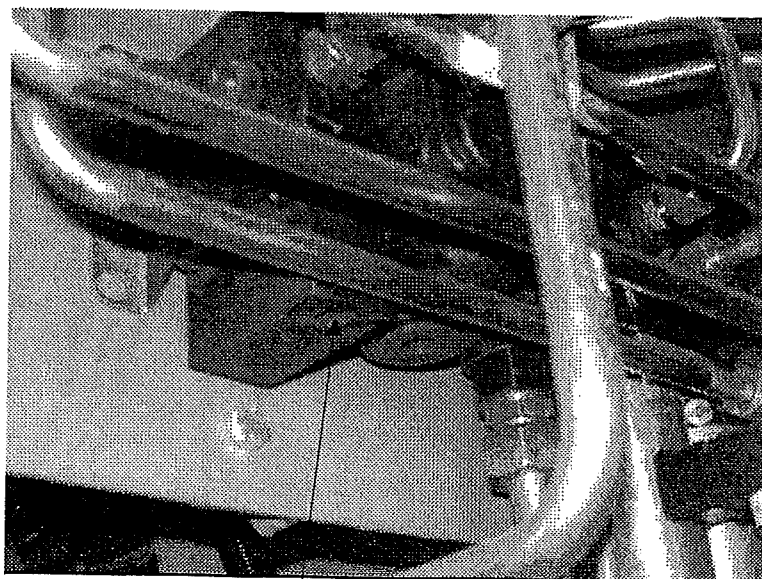


Fig 5.6

Item 1

5.6 – ATTACHING TO TRACTOR

Tractor Wheel Settings

Both front and rear tractor wheels must run down centre of rows, and must span across the rows being lifted. Consult your tractor hand book for the correct procedure for setting tractor wheels.

6.1 – PREPARING FOR WORK

Main hydraulic supply

A splitter gearbox mounted with hydraulic pumps is on the front of the machine. On the left hand side of the gearbox is mounted a variable displacement pump which drives the main web (and the second web, mechanically from the main web, if fitted). On the right hand side of the gearbox is mounted a triple gear pump. The first pump mounted closest to the gearbox drives the Proclean or Galaxy units, whichever is fitted. The middle pump drives the Agitator unit and the Transfer stars or Picking Off Band units, whichever is fitted. The third pump drives the Starflow unit if fitted.

An oil reservoir is mounted on the front left hand side of the main chassis. Situated in the front face of the reservoir is a sight glass to indicate oil level and an oil temperature gauge. Top up the oil as required with the specified grade of oil (see section 9).

DO NOT allow oil temperature to rise above that indicated by the decal at the side of the gauge.

Supply hoses from the reservoir to the pumps have shut off valves fitted on the front of the reservoir. When the handle is in line with the hose then the valve is in the open position. When the handle is at 90 degrees to the hose then it is shut.

Fitted inside the reservoir are two suction strainers, one on each outlet. If oil contamination has occurred, these strainers must be removed, thoroughly washed and replaced.

A return line filter is fitted in the top of the reservoir and all returning oil passes through. These should be changed at the recommended service intervals (see section 9).

Care must be exercised when carrying out any maintenance work on the hydraulic system. Even though the machine is stopped and disconnected from the tractor, there may be residual pressure within the system. Carry out the residual pressure dump procedure before commencing any work (see section 8.12).

Direction of work

The cart elevator discharges to the right of the machine, and as the trailers taking the crop away should be on cleared ground, this determines the direction of work. This also ensures the harvester wheels will be on cleared ground once the plot is opened out. It is essential to have an adequate headland to enable the harvester to be entered squarely into the row ends without damage to the crop or machine.

6.2 – PREPARING FOR WORK

Row widths

When setting the harvester to particular row widths, the land wheels and digging area of the machine must be adjusted to suit. The following paragraphs advise the procedures required. It is important that both rows are equally spaced either side of the machine centre line.

Axle adjustments

Before commencing axle adjustments, ensure adequate jacks and axle stands of 2500 kg capacity are available, along with suitable wheel chocks. It is important that the machine is correctly fitted to the tractor (see section 5) and that the tractor handbrake is applied whilst axle adjustments are carried out.

Place chocks at the front and rear of the opposite side wheel to the one being adjusted. Jack up the machine using the jacking point situated under each axle radius arm (fig 6.1). Place an axle stand under a suitable point on the main chassis and lower the jack to allow the axle stand to take the weight of the machine.

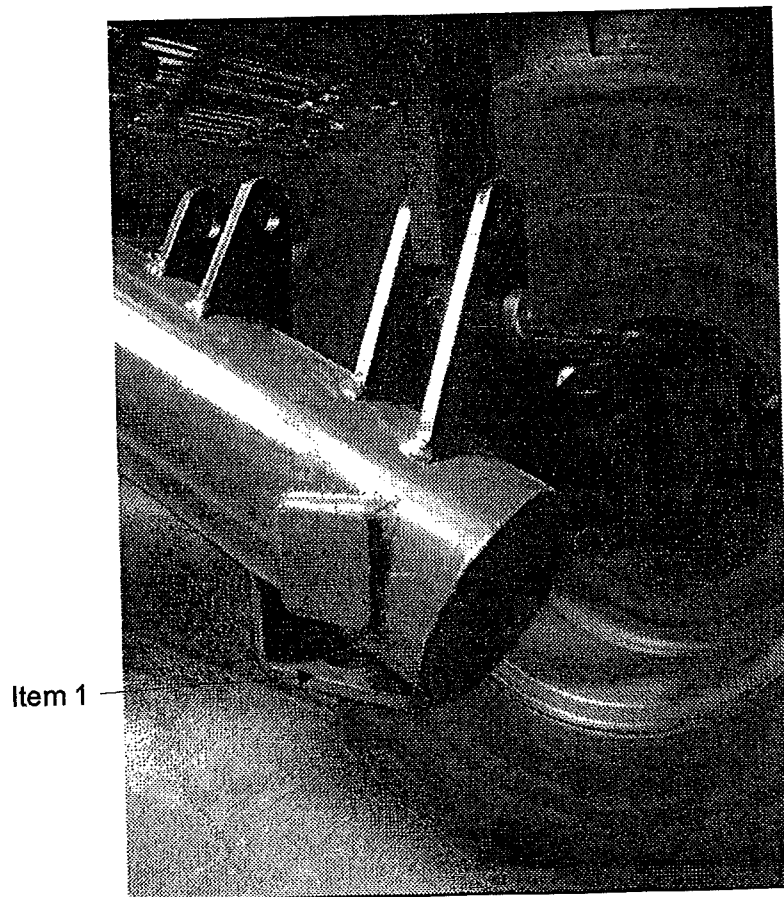


Fig 6.1

6.3 – PREPARING FOR WORK

Remove the two bolts in the steering track rod (fig 6.2) and remove the pin through the main axle beam, which secures the supported axle. Slide the axle to the new required position (fig 6.3) and replace the pin through the main axle beam. Repeat the whole operation for the opposite side wheel. Both axles must be set correctly even though the right hand wheel runs on cleared ground.

If, after having set the wheels to the required row widths, the left hand wheel is found to damage the edge of the row, it may be advisable to move the wheel in by one extra hole. For narrow settings, or for any special conditions, which may be encountered, additional hole settings are available (fig 6.3).



Item 1

Fig 6.2

Track rod adjustment

After completion of the axle adjustments, the track rod will need to be reset. Slide the inner rod in or out, until there is approximately 25 mm toe-in at the front of the wheels when they are in the straight ahead position. Replace and tighten the two bolts and nuts (fig 6.2 item 1).

6.4 – PREPARING FOR WORK

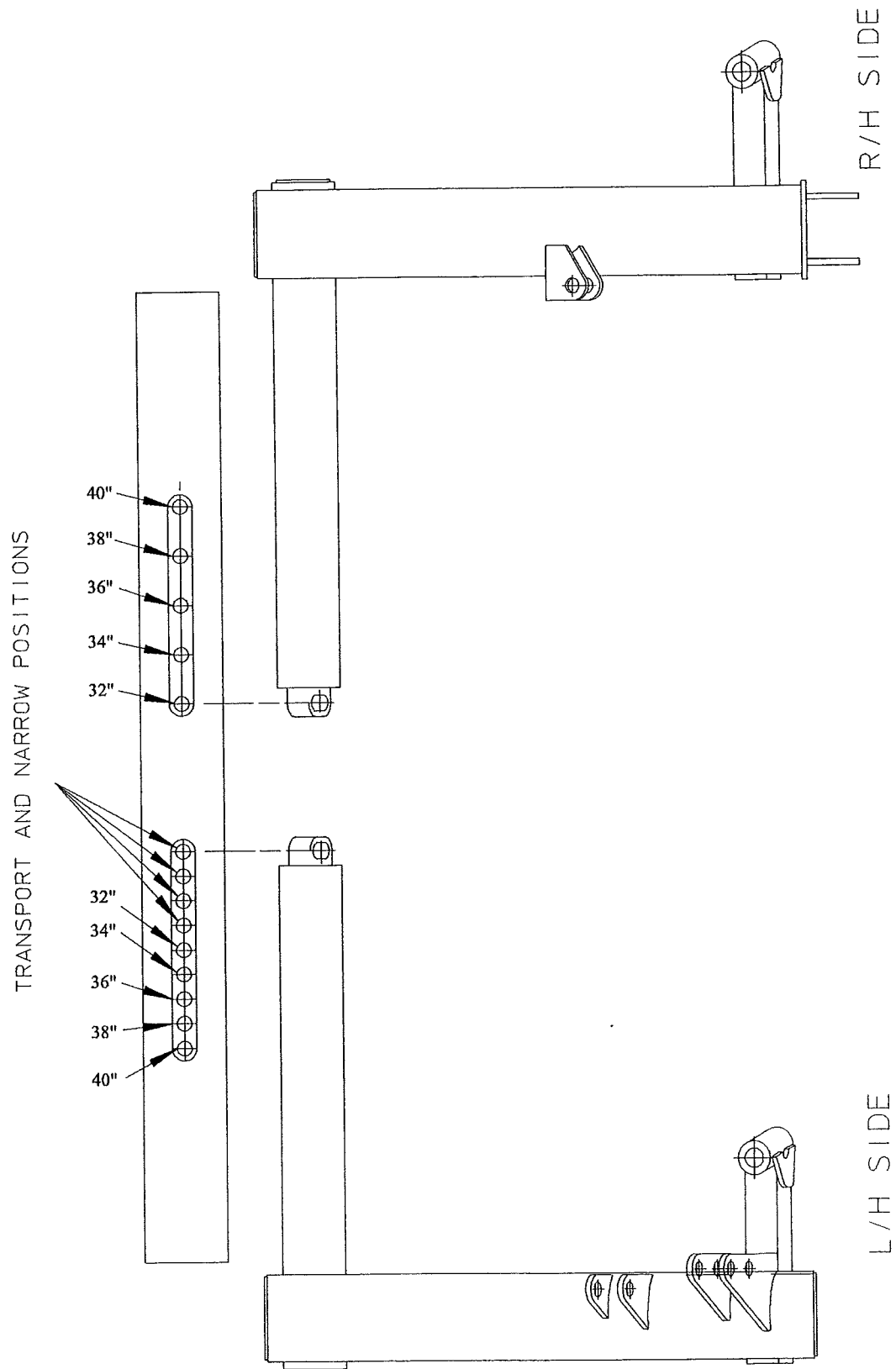


Fig 6.3

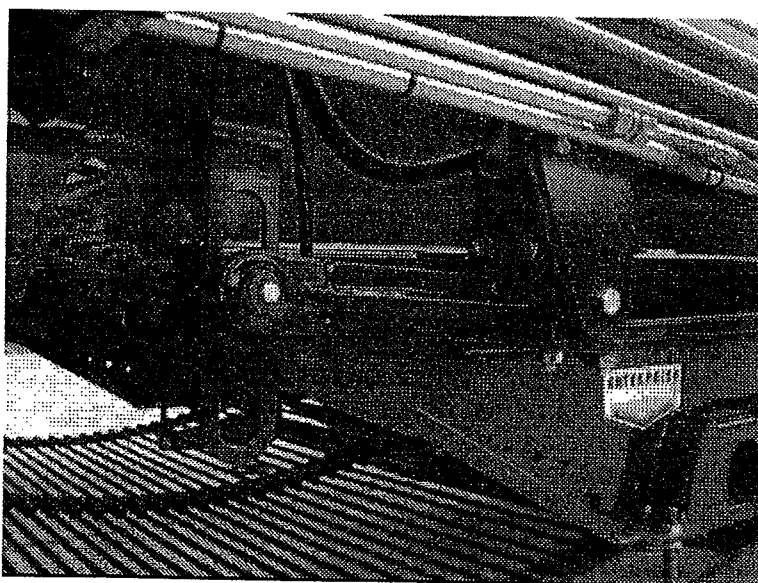
6.5 – PREPARING FOR WORK

Floating chassis

The floating chassis, including the complete intake assembly, of shares, discs and depth wheels, is controlled by two hydraulic cylinders which raise and lower the floating chassis into and out of work. As the depth wheels act independently on the two rows, these cylinders, which are controlled by proximity sensors on the depth wheel frame, and also manually by switch on the driver's control box, act independently to give flexible depth control of both rows.

The right hand side floating chassis member is mounted at the rear on a flexible suspension unit, which applies some downward pressure, and also allows the floating chassis to follow the independent movement of the two depth wheels.

Pressure adjustment is made by means of a quadrant plate (fig 6.4 item 1) mounted at the rear of the floating chassis. Rotating the quadrant plate in an anti-clockwise direction reduces the pressure. Rotating clockwise increases the pressure.



Item 1

Fig 6.4

Share pitch adjustment

Adjusters are fitted to either side of the machine (fig 6.5 item 1) to change the pitch of the shares. The points of the share should be kept as high as practical whilst still maintaining adequate digging depth. This will ensure that the crop flows smoothly onto the web. If the points are lowered too much the crop will feed into the web with an increased risk of crop damage. Lowering the points will assist penetration, but if the soil has been adequately cultivated this should not be necessary.

6.6 – PREPARING FOR WORK

If the pitch of the shares is too steep (points lowered) it can greatly increase the loading or bulldozing effect on the share frame, especially when in hard or tough conditions.



Item 1

Fig 6.5

Keep a regular check for soil build-up on the share frame, especially in wet conditions as a pad of soil at this point can create a considerable braking effect on the web. Also ensure that the share frame is not rubbing on the web bars at this point.

Share width adjustment

Before commencing any share adjustments, the floating chassis must be supported on the transport lock chains (see section 2.10)

The share frame is mounted across the machine under the first web. The standard share has two blades for each row. Each blade has six mounting holes, of which only three are used at any one time to mount it to the share frame. The row width adjustment is carried out by using the alternative attachment holes to achieve the required row width (fig 6.6). Both shares must be set to the same width.

6.7 – PREPARING FOR WORK

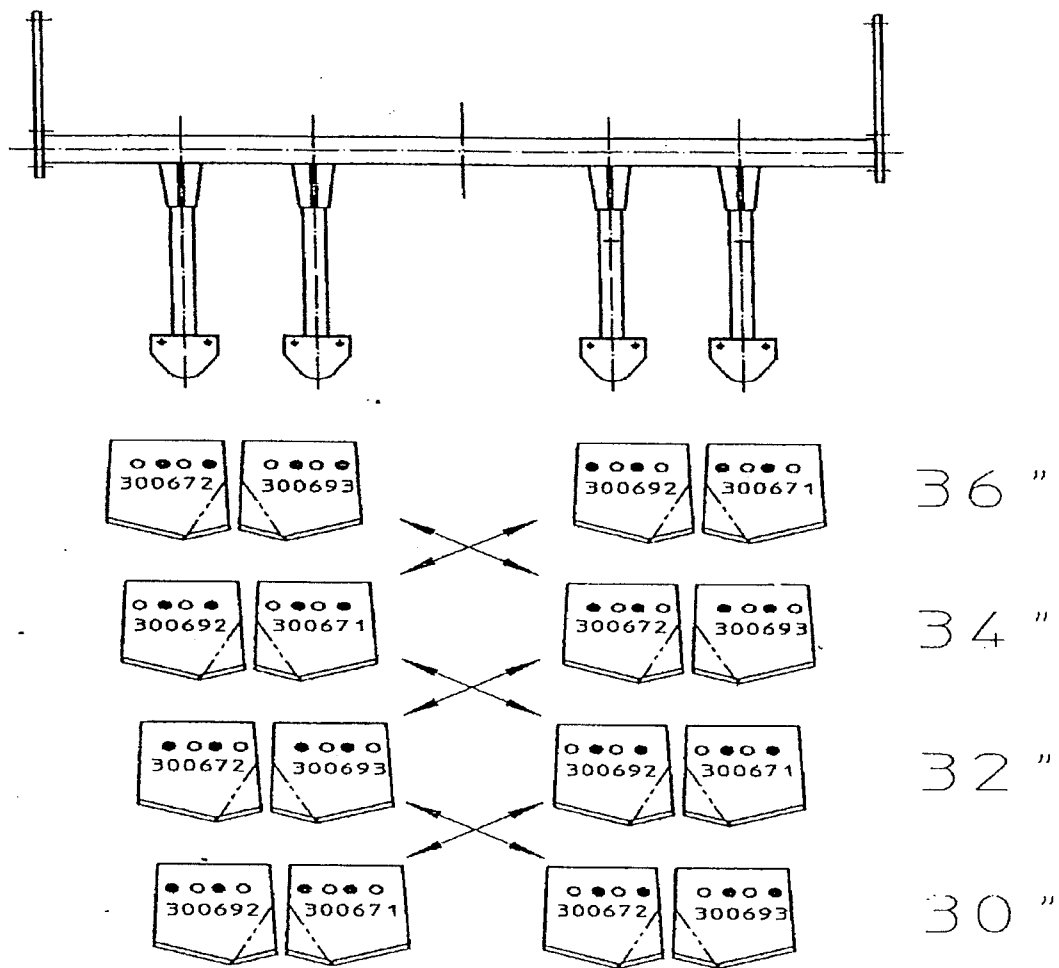


Fig 6.6

Share options

Several share options are available to suit varying soil and harvesting conditions. The most common share options are:-

Three piece, a three bladed share with stone flaps across the rear of each blade, used in light fluffy soils which may not flow readily across the share.

Two piece, a two bladed share with stone flaps across the rear of each blade. The most popular general purpose share blade, which can dig the minimum amount of soil without loss of potatoes.

Single piece, a single blade share for soil containing flat or wedge shaped stones, which may wedge between the blades of other share arrangements.

Shares for different crops are also available

6.8 – PREPARING FOR WORK

Floating chassis bridge

Discs and depth wheels are mounted on a bridge that is bolted on to the front of the floating chassis and has three possible positions. The standard position is with the bridge bolted in the rear set of holes. The bridge may be moved forward 25 mm or 50mm.

Disc width adjustment

WARNING KEEP CLEAR OF DISC COULTER. RISK OF CRUSHING LIMBS (fig 6.7).

Warning, disconnecting clamp bolts from assemblies could give the risk of operator injury.

Before commencing any share, disc or depth wheel adjustments, the floating chassis must be supported on the transport lock chains (section 2.10).

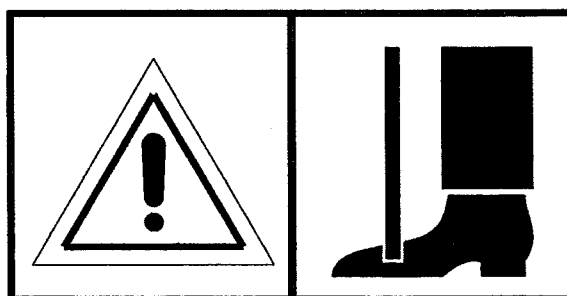


Fig 6.7

Each disc assembly is attached to a common crossbeam. The clamp bolts should be loosened to allow the disc to be moved sideways to the required position (fig 6.8 item 1). When the shares have been correctly set, the discs should be adjusted to be approximately 20 mm clear of the edge of the share blade. All discs should be adjusted equally. Tighten all disc mountings when adjustments are complete.

When a centre share blade option is fitted, the centre pair of disc assemblies must be removed.

6.9 – PREPARING FOR WORK

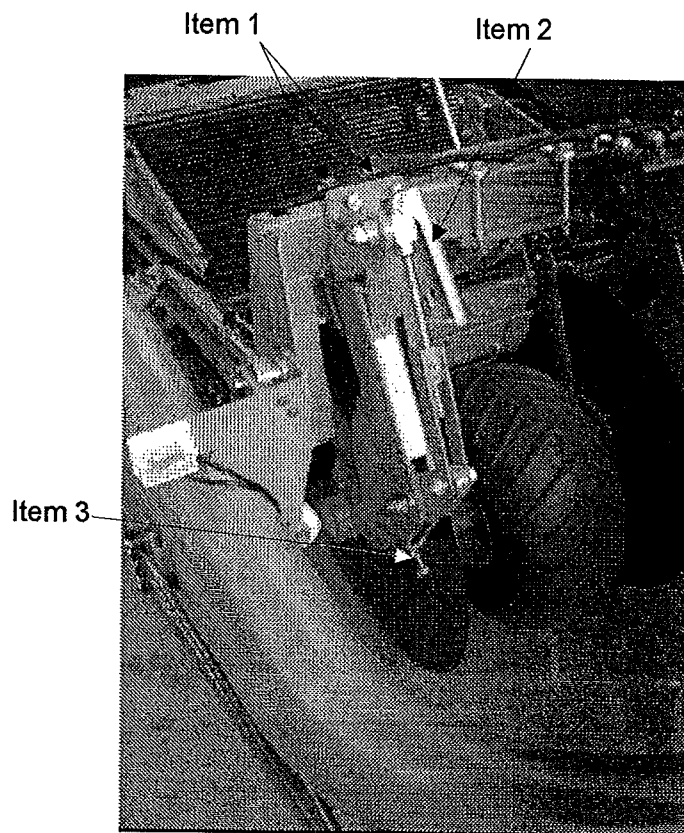


Fig 6.8

Disc depth adjustment

The discs should be set deep enough to cut the haulm and to turn positively without skidding. Excessive depth should be avoided as this could cause the discs to act as wheels and partially support the floating chassis. The centre pair of discs, which do not follow the tractor wheels, may need a different setting to the outer ones, which operate where the haulm has been compressed.

Disc depth adjustment is controlled by a set stud under the disc arm (fig 6.8 item 3). Turning the set stud anti clockwise increases the depth and turning clockwise reduces the depth.

6.10 – PREPARING FOR WORK

Disc tension adjustment

The disc swing arm tension is controlled by a torsion block, which applies some downward pressure to ensure a clean cut, but allows some movement if the disc runs over an obstacle. Tension should not be adjusted too high to cause the discs to act as wheels and partially support the floating chassis. Adjustment is carried out by turning the handle at the top of the disc mounting (see fig 6.8 item 2). Turning the handle clockwise increases the tension and turning clockwise reduces the tension.

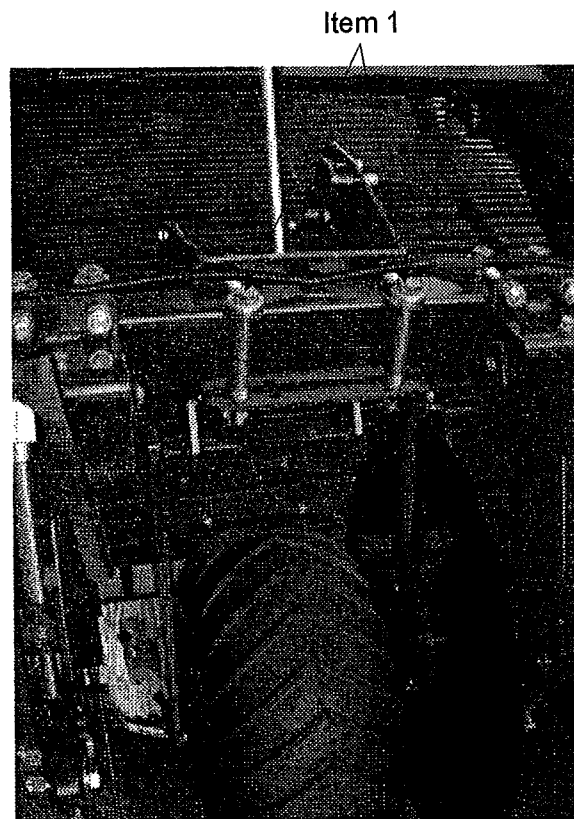


Fig 6.9

Anti-roll flaps

Fitted between the outer discs and the floating chassis side panel, and between the centre discs (if fitted) are rubber flaps to prevent the crop spilling out the front of the digging area. (Fig 6.10). These flap are on a pivot to allow material into the front of the machine but stop any losses. Different widths of flaps are available to suit different row widths.

6.11 – PREPARING FOR WORK



Fig 6.10

Depth wheel row setting

A depth wheel running on each ridge controls the share depth and these must be positioned to suit the row widths being worked. Each depth wheel is mounted in a frame, which is clamped to the same cross beam, which carries the disc mountings (see fig 6.9). To adjust, slacken the mounting clamp bolts (fig 6.9 item 1) and slide the frame and depth wheel assembly until the wheel is centrally positioned over the ridge. Tighten the clamp bolts. Both depth wheels must be equally spaced from the centre line of the floating chassis.

Depth wheel loading

The depth wheels have a torsion spring mounted in their pivot to provide downward pressure. This spring can be adjusted to increase or decrease the amount of pressure on the depth wheel. The spring retention bracket is mounted onto the depth wheel frame and has a number of positions. By removing the mounting bolts in the spring retention bracket, and locating the bracket in a forward, or rearward position, spring pressure can be altered (fig 6.11 item 1).

6.12 – PREPARING FOR WORK

Depth control

The share depth is automatically controlled by proximity sensors situated adjacent to each depth wheel (Fig 6.11 item 2), these are activated by trigger plates attached to the depth wheel mounting frames (Fig 6.11 item 3). Each depth wheel is adjusted and controlled independently of the other.

The depth is adjusted by two means, a fine adjustment by turning the handle mounted on the frame of the depth wheel (Fig 6.11 item 4), and a coarse adjustment which is achieved by moving the trigger plate (Fig 6.11 item 1).

Turning the handle clockwise decreases the digging depth, whilst turning the handle anti-clockwise increases the digging depth (fig 6.11 item 4).

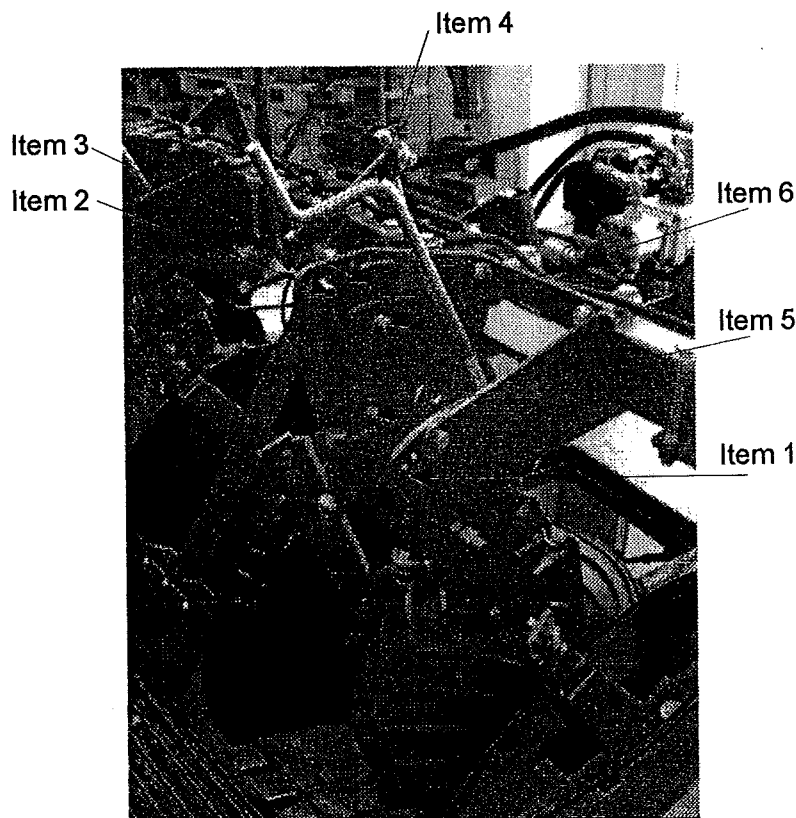


Fig 6.11

To adjust the trigger plate, slacken the trigger plate pivot screw (Fig 6.11 item 5), and remove the trigger plate retaining screw (Fig 6.11 item 6); move the trigger plate to the required new setting and refit the retaining screw. Tighten both screws. Moving the trigger plate forwards increases digging depth, while moving rearwards, lessens digging depth.

7.1 – OPERATING ADJUSTMENTS

Steering

Only operate the steering while the machine is moving, or some of the components may be damaged.

The steering is controlled by a joystick on the driver's control box (see section 4 Controls). Use the steering to keep the machine correctly in the rows, especially on sidling slopes. If the machine's left wheel is allowed to run on or against the next ridge, the soil may be compressed, making the crop difficult to separate, also potatoes may be damaged.

A steering indicator is fitted to the right hand side of the machine, in full view of the driver, showing the attitude of the wheels (fig 7.1).

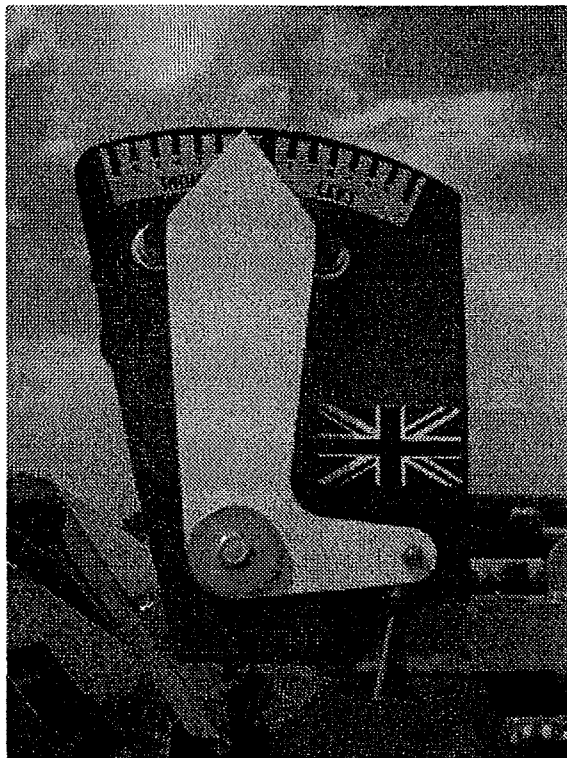


Fig 7.1

Steering should be used in conjunction with the lanes adjuster to ensure the machine operates parallel to the rows or beds.

Lanes adjuster

Only operate the lanes adjuster when the share is raised or the machine is moving, or some of the components may be damaged.

The lanes adjuster is an hydraulic double acting cylinder mounted between the drawbar and the main chassis, and is controlled by a switch on the driver's control box (see section 4 Controls). The lanes adjuster should be used in conjunction with the steering to centralise the machine in the rows being lifted.

7.2 – OPERATING ADJUSTMENTS

Hydraulic levelling

The right hand wheel is mounted on a pivoting axle beam and connected to the main chassis by a hydraulic cylinder (fig 7.2 item 2). Extending the cylinder will raise the chassis while closing the cylinder will lower the chassis on that side. The cylinder is controlled by a switch on the driver's control box (see section 4). Ensure transport lock is in the open position for work (fig 7.2 item 1).

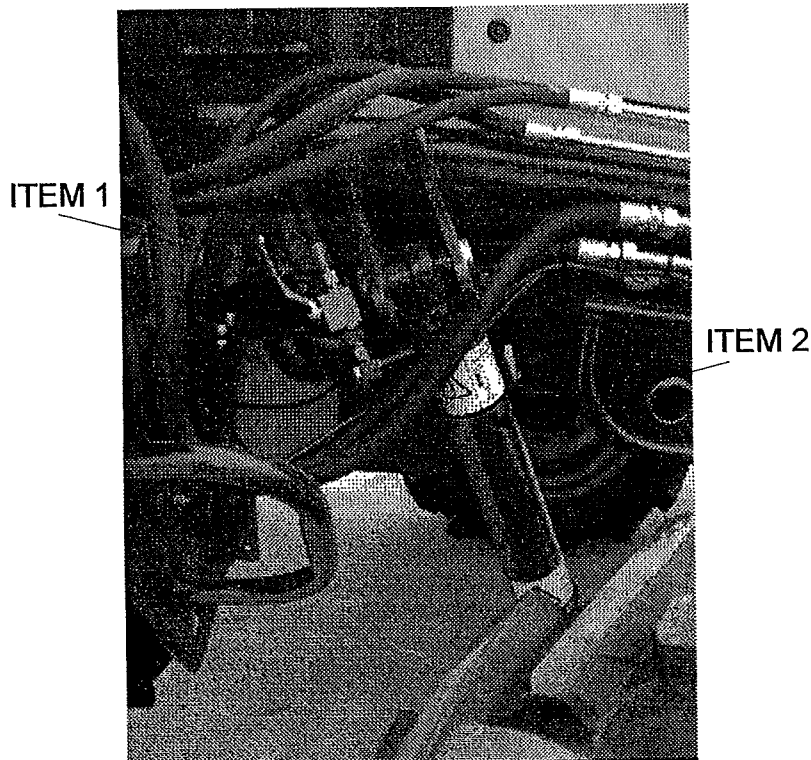


Fig 7.2

Use the levelling to maintain a level transverse attitude, especially when working on sidling slopes. This will ensure an even spread of crop across the full width of the machine, thus making the maximum use of the separation capability of the harvester.

It is possible to have the levelling cylinder controlled by an optional electronic device which will give automatic control of the levelling (see section 12 Options).

Main web speed

The main web is driven by a high capacity variable speed hydraulic motor. This motor is controlled by a rotary switch in the driver's control box (see section 4). As soil conditions vary, and as the crop matures, the web speed may need to change. Try to achieve a web speed, which will take the crop and soil cleanly away from the share, but is slow enough to avoid excessive crop bounce and roll-back.

The web speed will be closely related to the degree of agitation used. Judge the settings by the finished result, not by words in a book.

There is an obvious connection between speed and damage. Take care.

7.3 – OPERATING ADJUSTMENTS

Changing webs

Correct changing of webs on the harvester requires special skills and procedures to be employed; and should not be attempted before first contacting an authorised Richard Pearson dealer, or the manufacturer for further advice and training.

Main web agitation

A rotating agitator is fitted inside the main web and is mechanically driven. Mounted in front of the agitator are control rollers for adjusting the amount of agitation imparted to the crop. Raising the control rollers will lift the web away from the agitator, lowering the control rollers will lower the web onto the agitator. The higher the web is lifted the less effect the agitator will have on the crop flow.

The control rollers are adjusted by bolting an arm in one of a series of holes. Set the control rollers to the desired position and ensure all nuts and bolts are re-tightened. (Fig 7.3 item 1).

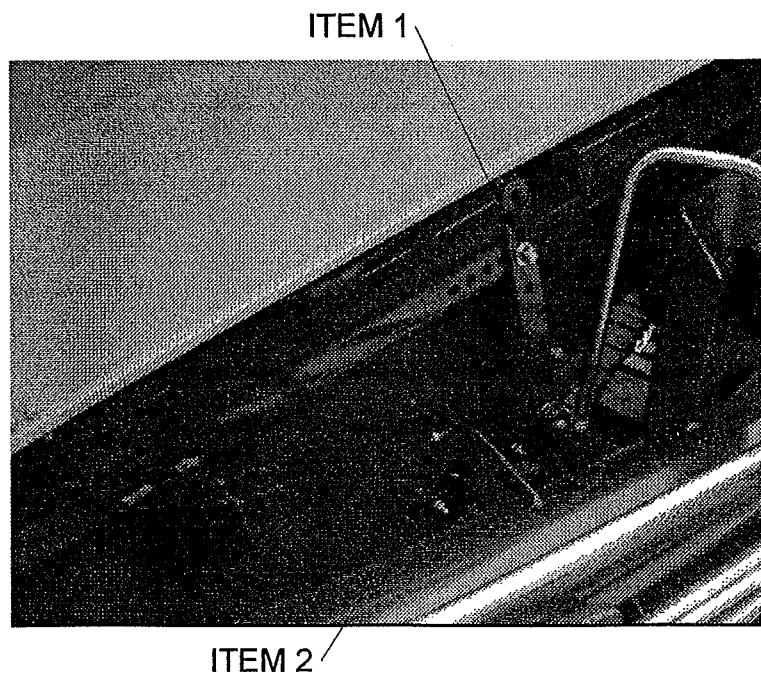


Fig 7.3

Use agitation with caution. Excessive agitation can cause severe crop damage. Remember that soil is the best cushion for the crop, so aim to keep some soil with the crop until the last possible moment as it passes through the machine.

An electric actuation option is available giving control from the driver's control box (see section 4 Controls) for the amount of agitation on the crop flow (see section 12 Options).

7.4 – OPERATING ADJUSTMENTS

The agitator shaft can be adjusted up and down by bolting the bearing housing in one of its three positions. (Fig 7.3 item 2). Both sides must be adjusted to the same position. Ensure all nuts and bolts are re-tightened after changing position.

Haulm extraction rollers

WARNING: DO NOT ATTEMPT TO CARRY OUT ANY MAINTENANCE, ADJUSTMENTS OR REMOVE BLOCKAGES ON THE HAULM ROLLER UNIT UNTIL MACHINE AND TRACTOR ARE STOPPED AND TRACTOR IGNITION KEY REMOVED

WARNING: at any time when haulm roller performance is being visually monitored, eye protection must be worn by all persons involved with this operation due to the danger of flying debris

The haulm roller is a rubber covered roller positioned immediately behind the main web. This roller is mechanically driven from the main web and contra-rotates against the web to form a pinch point to extract the haulm. The roller is held in position against the web by spring pressure and the gap between the web and roller can be adjusted. A row of haulm fingers are mounted above the haulm roller to assist in guiding the haulm into the extraction point.

Haulm roller spacing

The spacing between haulm roller and web can be adjusted, but may affect performance. A wider setting is likely to take out small potatoes. The optimum setting is to have the haulm roller running just clear of the main web bars so as to prevent vibration and give maximum grip to extract haulm.

To adjust the gap between haulm roller and web, release the spring tension, which holds the roller to the web (Fig 7.4 item 1). Slacken the clamp bolts locking the bump stop. (Fig 7.5 item 1).

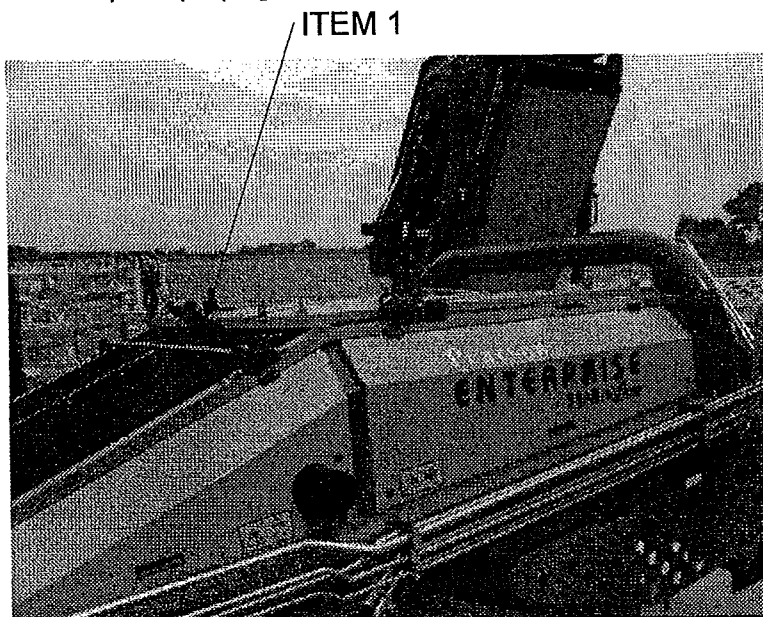


Fig 7.4

7.5 – OPERATING ADJUSTMENTS

Adjust the set screw in or out to achieve the desired new position. (Fig 7.5 item 2). Repeat these operations for the opposite side of the machine, making sure that both ends of the roller are set to the same position, and maintaining the roller parallel to the web. When the necessary adjustments have been made, tighten all bolts and nuts on both sides of the roller.

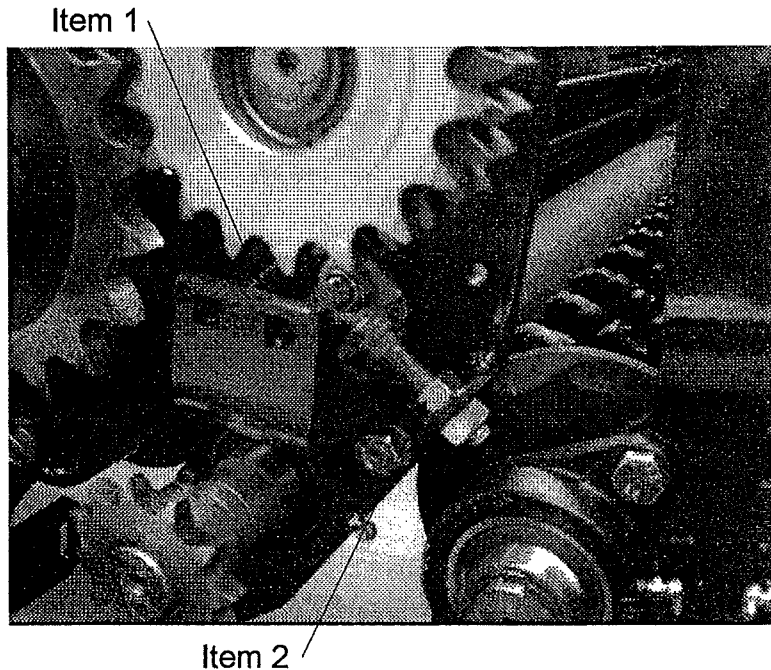


Fig 7.5

Haulm roller tension

The haulm extraction roller tensioning handle has considerable spring pressure against it. Operate with care.

An over-centre handle on the left hand side of the machine (Fig 7.6 item 1) is used to release the spring tension which holds the haulm roller in position against the web. Use this handle to open the rollers if a blockage occurs and also before making adjustments to the roller settings.

Adjust spring tension via hook bolt (Fig 7.7 item 1).

Always reset the handle before commencing work.

7.6 – OPERATING ADJUSTMENTS

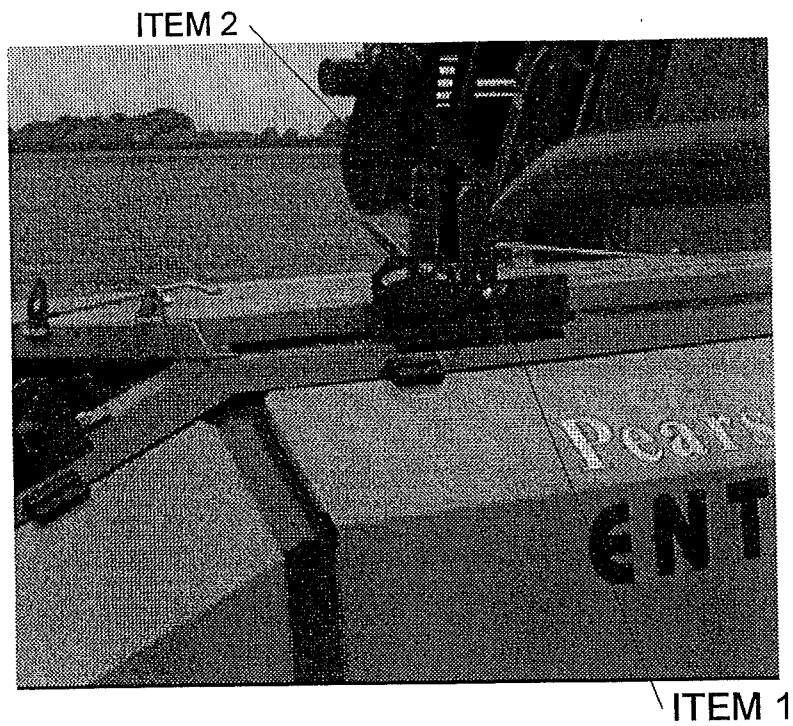


Fig 7.6

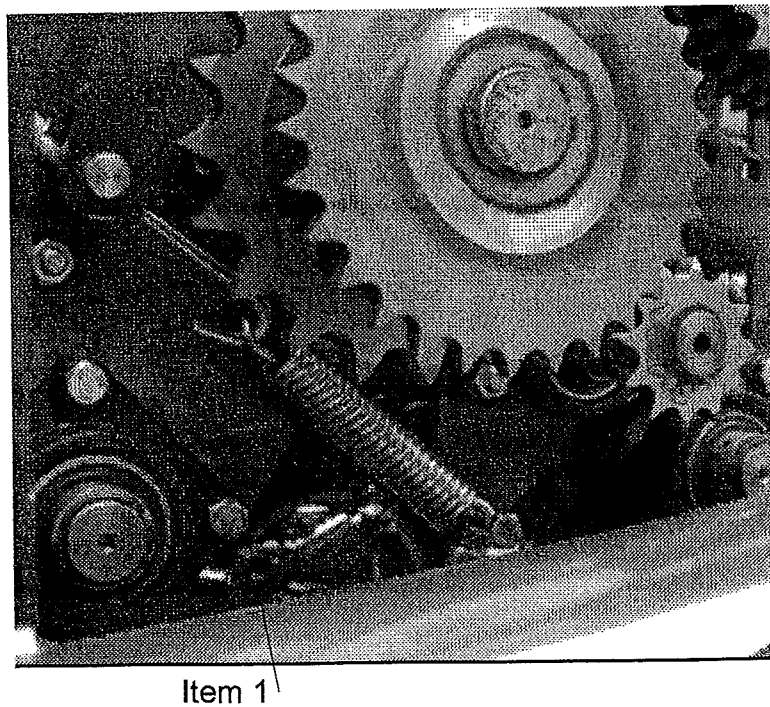


Fig 7.7

7.7 – OPERATING ADJUSTMENTS

Haulm roller height

Haulm roller height settings are a compromise between haulm extraction and potato loss.

In green immature haulm it is usually best to set the roller low, with the haulm fingers in a high position and allow the bulk of the haulm to pass over the roller and let the trailing end drop onto the roller, which is then dragged back and extracted. At this stage of crop maturity the potatoes are comparatively small and tender, hence the need for the roller to be set low.

When the haulm is more mature, and the potatoes somewhat larger, the roller should be raised and the haulm fingers set lower. This means the haulm will be fed directly into the roller and extracted. The potatoes should, at this stage of maturity, be large enough to pass over the roller without damage.

The vertical position of the haulm roller, in relation to the web can be adjusted by means of levers which extend above the drive guards at either end of the roller (Fig 7.6 item 1).

There are five positions for the handle to be set in. Before adjusting the position of the handle the nylon jockey chain tensioner mounted on the left hand handle must be slackened off. (Fig 7.8 item 1).

ITEM 1

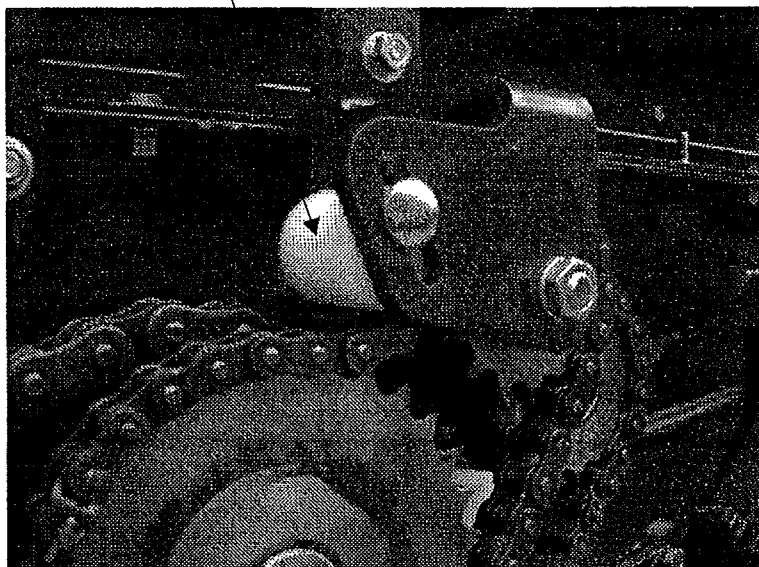


Fig 7.8

7.8 – OPERATING ADJUSTMENTS

To adjust the haulm roller handle remove the R clip and pin from the top of the handle, adjust to new position replace locking pin and R clip. Once adjustment has been completed adjust and tighten nylon jockey roller on left arm.

Haulm roller scraper

A scraper is fitted to the haulm roller and should be adjusted to be as close as possible to the roller without actually touching it.

Haulm roller reverse

For some types of crop it is advantageous to reverse the direction of rotation of the haulm roller. This is achieved by replacing the gear drive (fig 7.9 item 1), with chain and sprockets.

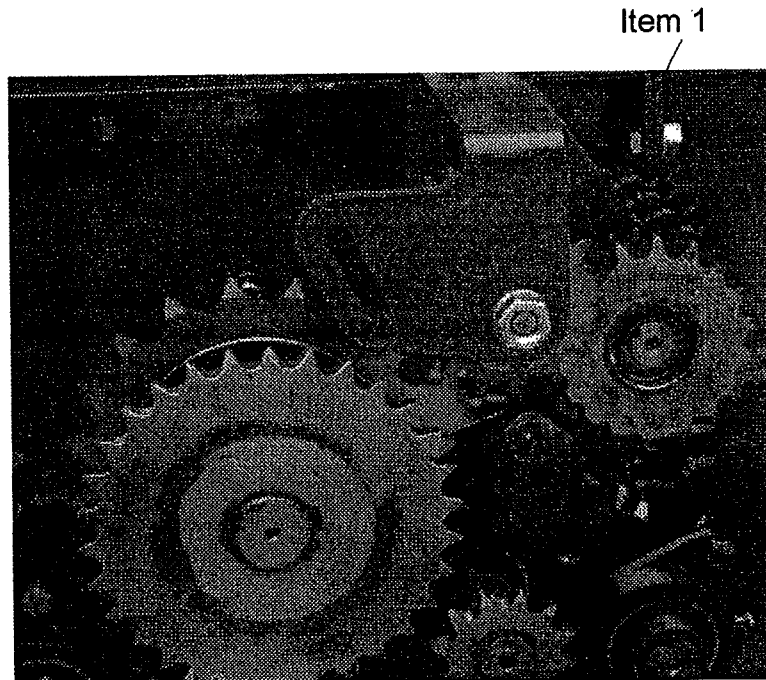


Fig 7.9

Haulm fingers

The finger assembly (fig 7.10), is adjustable for angle by means of a lever positioned on the left hand side of the assembly (fig 7.6 item 2). When the lever is in the forward position the haulm fingers are out of work. Moving the lever rearwards lowers the fingers towards the crop and haulm passing over the web.

7.9 – OPERATING ADJUSTMENTS

Adjustment should be made so the fingers are lowered sufficiently to guide the haulm, without interfering with the crop passing through them.

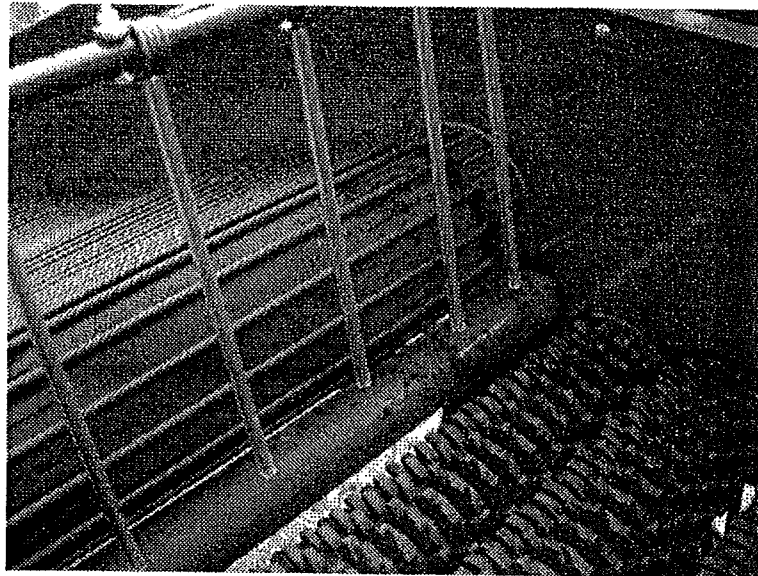


Fig 7.10

Starflow separator

The Starflow unit comprises of two pairs of star shafts followed by a clod roller and a transfer roller (Fig 7.11).

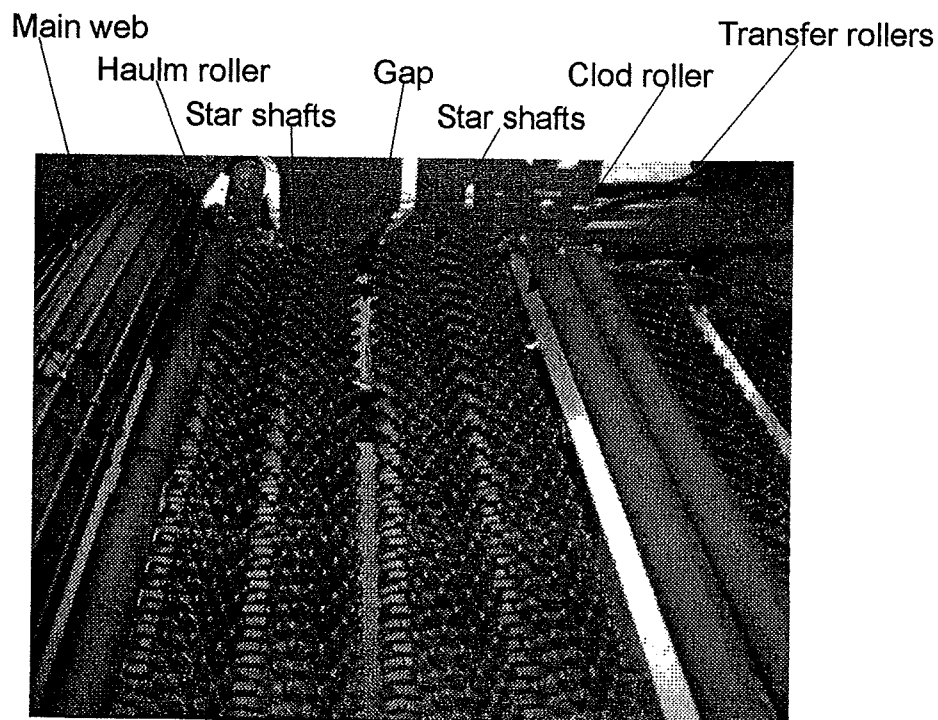


Fig 7.11

7.10 – OPERATING ADJUSTMENTS

The gap between the second and third star shafts can be adjusted to increase or decrease the gap, so that the amount of separation can be set to suit the crop conditions.

To adjust this gap, slacken bolts (Fig 7.12 item 1) and adjust screw (Fig 7.12 item 2) to give the desired gap between star shafts. Ensure the gap is adjusted evenly on both sides of the machine.

The clod and transfer rollers are mounted on a separate arm and the gap between the clod roller and the last star shaft can be adjusted to make the clod roller more or less aggressive. To adjust the gap, slacken lock nuts and adjust screw (Fig 7.12 item 3). After the adjustment has been completed, tighten the lock nut. Ensure the clod roller is adjusted evenly on both sides of the machine.

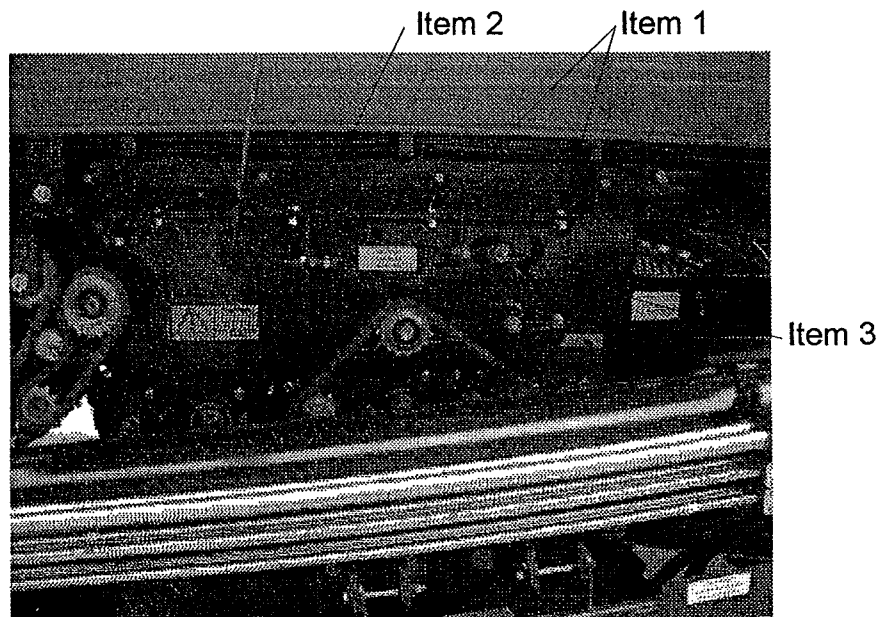


Fig 7.12

Clod roller scraper

Scrapers are fitted to both the clod roller and the transfer roller and should be adjusted to be as close as possible to the rollers without actually touching them.

7.11 – OPERATING ADJUSTMENTS

Clod roller scraper reversing

For some types of crop it is advantageous to reverse the direction of rotation of the starflow clod roller. This is achieved by replacing the gear drive with chain and sprockets.

Transfer roller scraper.

The rear transfer roller scraper is mounted via a suitable bracket. This bracket must be the correct one to suit the separator unit following the starflow, i.e. Proclean (Fig 7.13) or Galaxy (Fig 7.14).

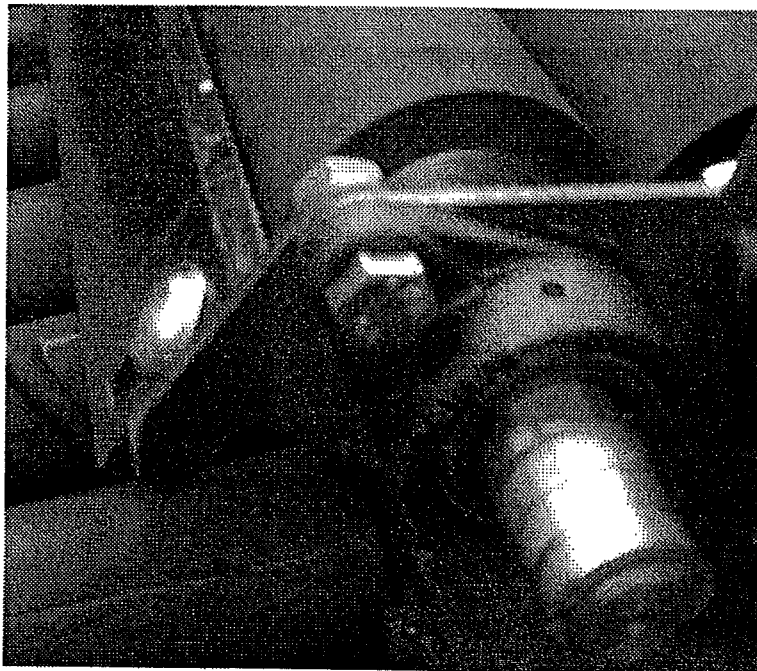


Fig 7.13

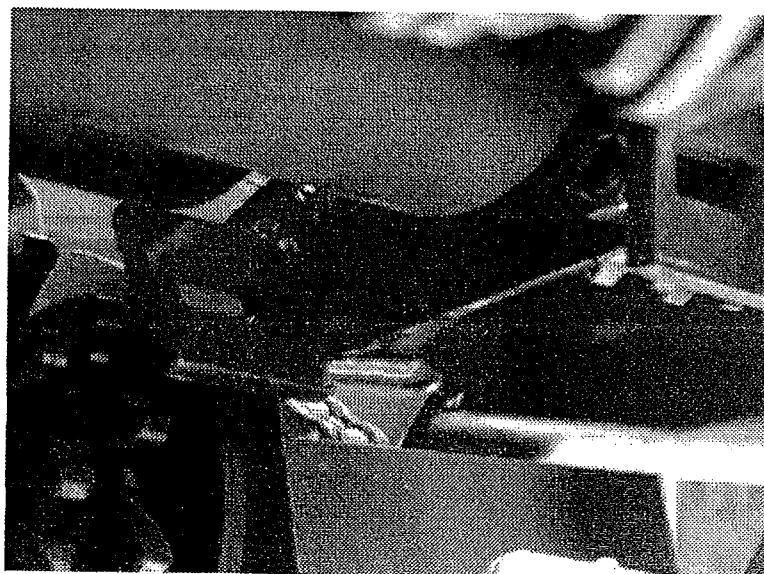


Fig 7.14

7.12 – OPERATING ADJUSTMENTS

EASI-CHANGE MODULES - GALAXY AND PROCLEAN SEPARATORS

Galaxy stone and clod separator

When the Galaxy module is fitted the chassis height setting must be in the its low position (see section 5.1)

The Galaxy is a stone and clod separator and consists of four rows of composite stars and two contra-rotating clod rollers. The unit is hydraulically driven and is adjustable for speed. To accommodate varying soil and crop conditions, and alternative clod roller shapes, the gap between the clod rollers and the stars can be adjusted.

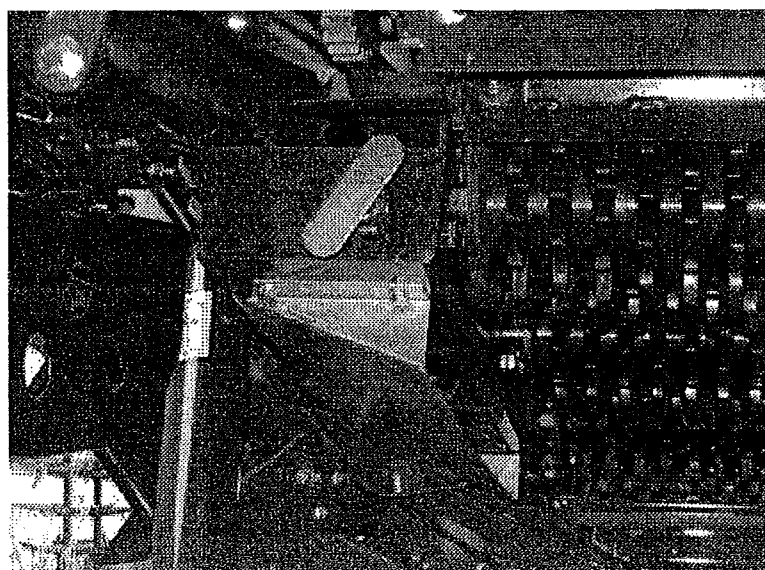
Clod roller adjustment

WARNING DO NOT ATTEMPT TO CARRY OUT ANY MAINTENANCE, ADJUSTMENTS OR REMOVE BLOCKAGES ON THE CLOD ROLLER UNIT UNTIL MACHINE AND TRACTOR ARE STOPPED, AND TRACTOR IGNITION KEY REMOVED

The steel clod rollers can be adjusted for height in relation to the star shafts. Both rollers are linked together for adjustment, and must be adjusted as one unit. Adjustment must be eve on both sides of the machine.

Adjustment is made using rotating handles on either side of the front of the module (Fig 7.15). Turning the handle clockwise lowers the rollers, whilst turning anti clockwise will raise the rollers relative to the stars.

Scrapers are fitted beneath each clod roller, these should be adjusted to be as close as possible to the roller periphery without actually touching.



7.13 – OPERATING ADJUSTMENTS

Fig 7.15

Under normal conditions, the optimum position is when the top of the roller is level with the centre line of the row of stars preceding it. If raised higher the roller will take out more material, but may also take out small potatoes; small potatoes are more likely to be lost than larger ones. Lowering the roller below the optimum position will allow clods to pass over the rollers and not be extracted.

Adjustment of these rollers is very sensitive, adjust only a little at a time, allow to settle to new settings, and judge by results.

For some types of crop it is advantageous to reverse the direction of rotation of the Galaxy clod rollers. This is achieved by re-routing the drive chain for the clod rollers in the right hand drive box. (Fig 7.16).

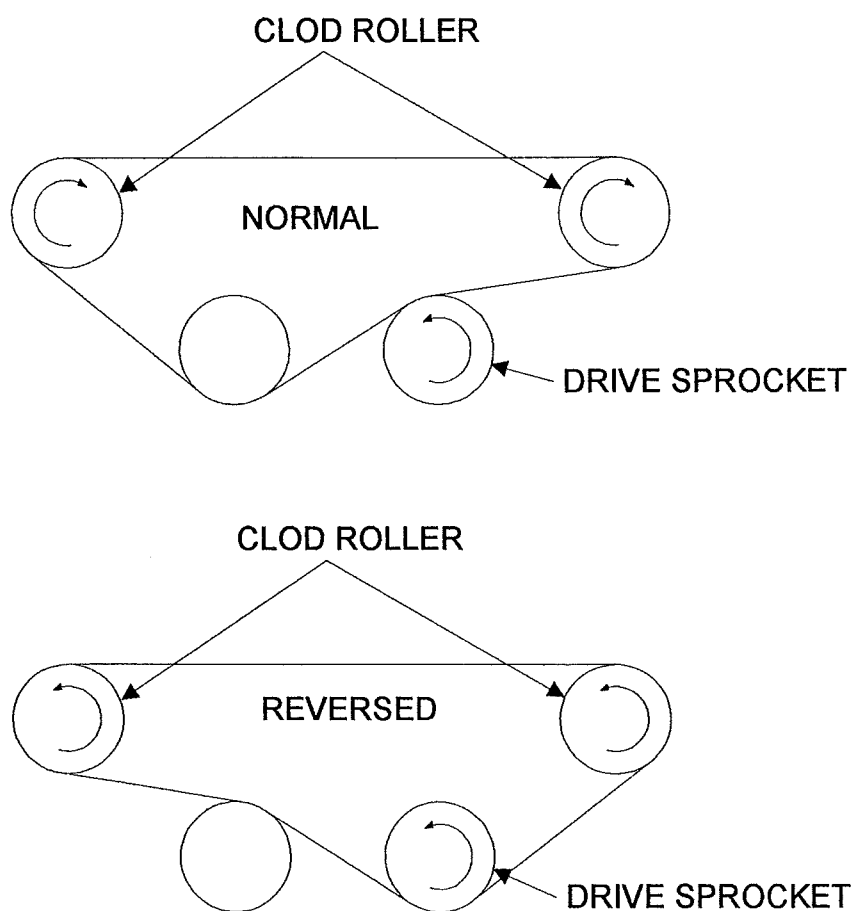


Fig 7.16

7.14 – OPERATING ADJUSTMENTS

Galaxy speed adjustment

The speed of the Galaxy unit is controlled by a flow control valve mounted on the rear left hand side of the machine.(Fig 7.19). Turning the knob will increase or decrease the speed. When the Galaxy unit is fitted the electrical connections for auto reversing are disconnected. This is achieved by removing the plug item 4 in Fig 7.19.

Proclean stone and clod separator

Never attempt to clean or replace roller until the tractor engine is turned off, the ignition key removed and the PTO disconnected.

Warning, at any time when Proclean roller performance is being visually monitored, eye protection must be worn by all personnel involved with this operation due to the danger of flying debris.

IMPORTANT!

During the course of the day's work, especially in wet conditions, it is important that the top of the Proclean gearbox is regularly checked and kept clear of soil.

Before carrying out this cleaning operation, all drives to the harvester must be disengaged, tractor engine stopped and the ignition key removed.

The Proclean separator module has nine pairs of contra-rotating rollers, driven by two hydraulic motors (Fig 7.17)

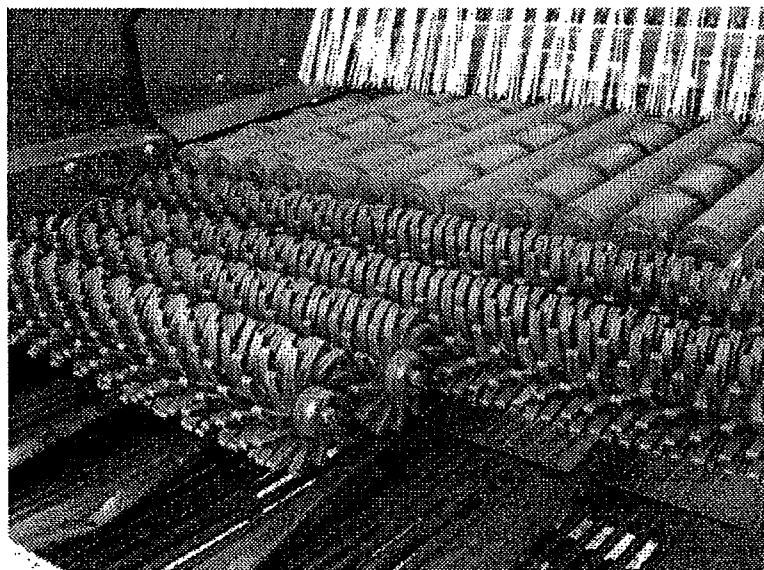


Fig 7.17

7.15 – OPERATING ADJUSTMENTS

The degree of separation is controlled by the length of time the crop remains on the separator, which in turn is determined by one, or a combination, of the following.

The separator drive speed (rotational speed of the rollers).

The forward speed of the harvester (the volume of crop reaching the separator).

The angle of the separator.

The amount of clod, stone and haulm with the crop.

The chosen roller diameter.

Operator adjustments consist of:

Speed control for the roller drive motors. Angle control for the separator unit.
Choice of roller diameter.

Proclean angle adjustments

Manual angle adjustment is carried out using a switch on the driver's control box (see section 4). An Indicator is fitted in front of the cart elevator, on the right hand side of the machine, to show, at a glance, the angle of the Proclean separator unit (see Fig. 7.18).

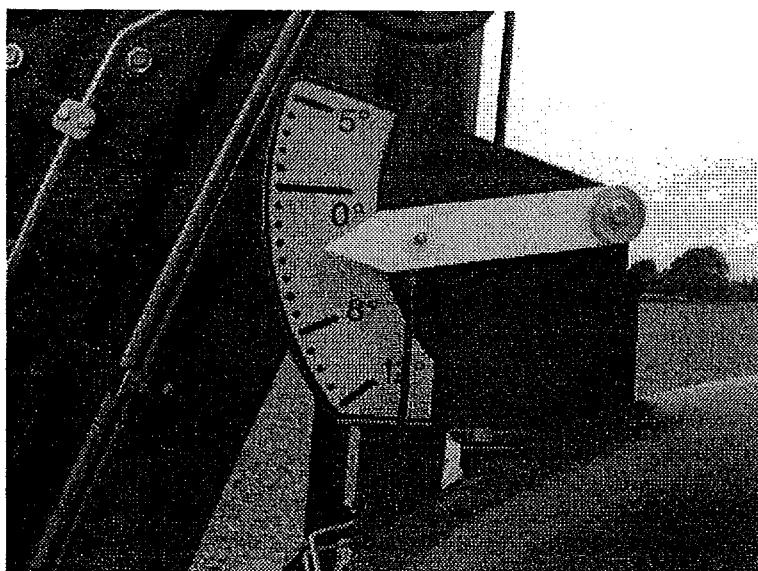


Fig 7.18

7.16 – OPERATING ADJUSTMENTS

Proclean roller Speed adjustment

Roller speed is controlled by a knob situated on the valve block at the rear left hand side of the machine. (Fig 7.19 item 5) Turning clockwise increases the speed of the rollers. Turning anti-clockwise decreases the speed of the rollers.

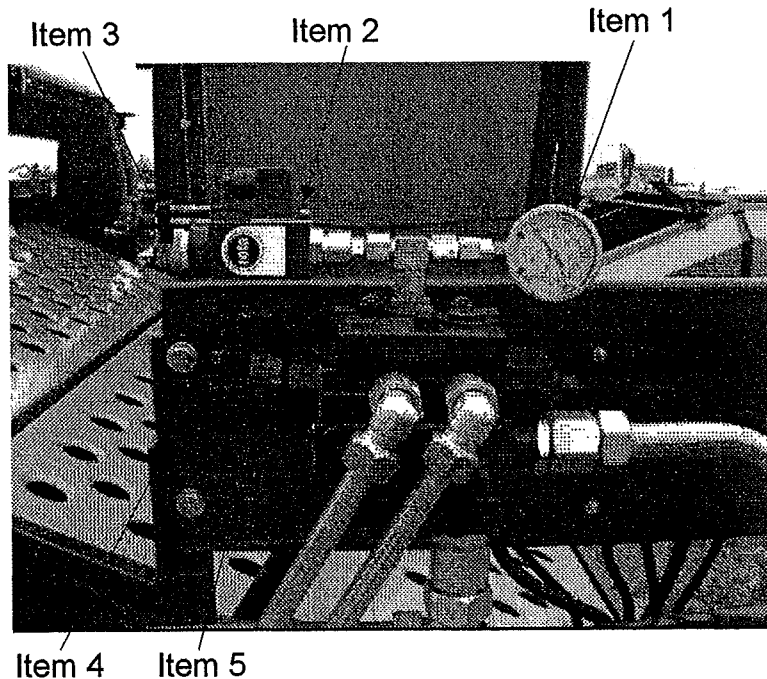


Fig 7.19

Proclean pressure adjustment.

The proclean unit is driven by two hydraulic motors and if over loaded or blocked is designed to go into reverse drive for a short period to clear itself. The operating pressure of the proclean can be seen in the gauge (Fig 7.19 item 1). The reverse operation is engaged by a pressure switch sensing the operating pressure in the drive motors (Fig 7.19 item 2). This pressure switch is adjustable and for normal work should be set at 20 bar above normal operating pressure. The pressure switch can be adjusted by rotating the knob on the end (Fig 7.19 item 3) and reading the setting on the scale. This setting is factory set at 70 bar. Normal operation of the proclean is 50 to 55 bar. This setting is ideal for working on stony land. When working in heavy land with a lot of clod, then it may be necessary to increase the reversing switch pressure setting.

Do not increase the setting of the pressure switch above 90 bar or accelerated wear will result in the proclean rollers.

7.17 – OPERATING ADJUSTMENTS

Changing Proclean roller

To suit varying crop and harvesting conditions, the plain rollers fitted in the Proclean separator module are available in various diameters. These can be changed as required. Before commencing changing the rollers, ensure that the machine is stopped and the tractor to machine PTO shaft is disconnected. Using the switch on the driver's control box (see section 4), raise the module to its maximum height. Remove the four bolts and nuts holding the rear guard panel in place. Disconnect the actuator from the Proclean module, (Fig 7.20) raise the module and adequately support it.

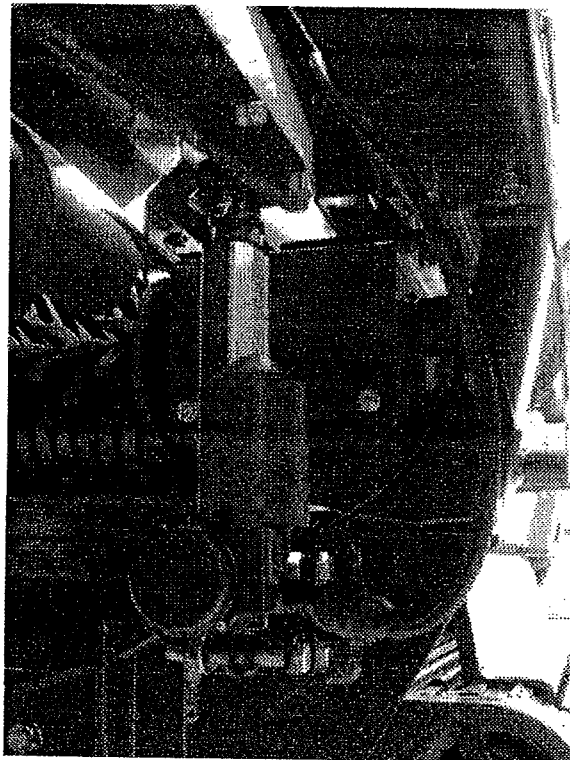
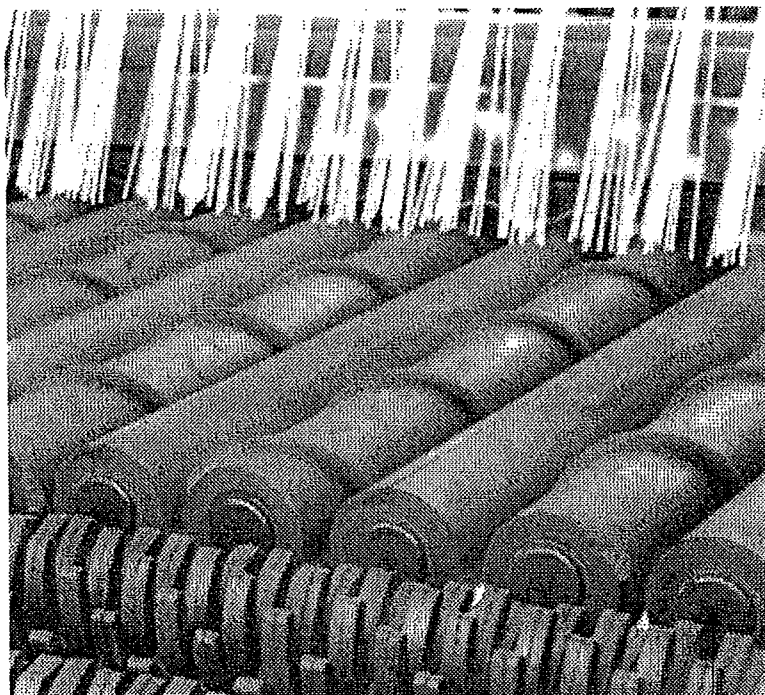


Fig 7.20

Prise out the plastic end cap in the roller to be changed, (see Fig. 7.21, item 1) remove the set screw and washers from the discharge end of the roller. The roller can then be removed by sliding it rearwards off its drive shaft. If the roller is tight on its shaft, it can be removed by using Proclean roller removal tool part no 301069. Slide the replacement roller onto the drive shaft, refit the set screw and washers and tighten. On completion of the roller changing operation, refit the rear guard panel in its correct position.

7.18 – OPERATING ADJUSTMENTS



Item 1

Fig 7.21

Fitted in the driver's control box is a Proclean roller reversing switch. Although in the case of any blockage occurring in the rollers they automatically carry out a reversing procedure to clear it. Pressing and holding this switch for a few seconds, will cause the rollers to momentarily reverse their direction of rotation and then revert back to their normal direction.

Proclean roller scrapers

Each of the plain rollers fitted in the proclean unit has a scraper on the under side. The scraper is adjustable and should be parallel to the roller and just clear of the roller. The scraper must be adjusted when roller size is changed. There is enough adjustment in the scraper to suit all roller sizes.

7.19 – OPERATING ADJUSTMENTS

Changing Proclean and Galaxy module

In order to remove and replace the modules it is essential that the special lifting cradle, part no. A610.301475 is used, in conjunction with a forklift truck of suitable capacity.

Using the jacking point situated under the axle (see Fig. 7.22, Item 1), raise the left hand side of the machine until the wheel is clear of the ground. Place an axle stand under the main chassis to support the machine. Adjust the jack to support the weight of the axle until the pins in the axle support leg can be withdrawn. Remove the axle support leg and refit in the forward position (see Fig. 7.22, Item 2). The machine can then be lowered to the ground and the jack and axle stand removed.

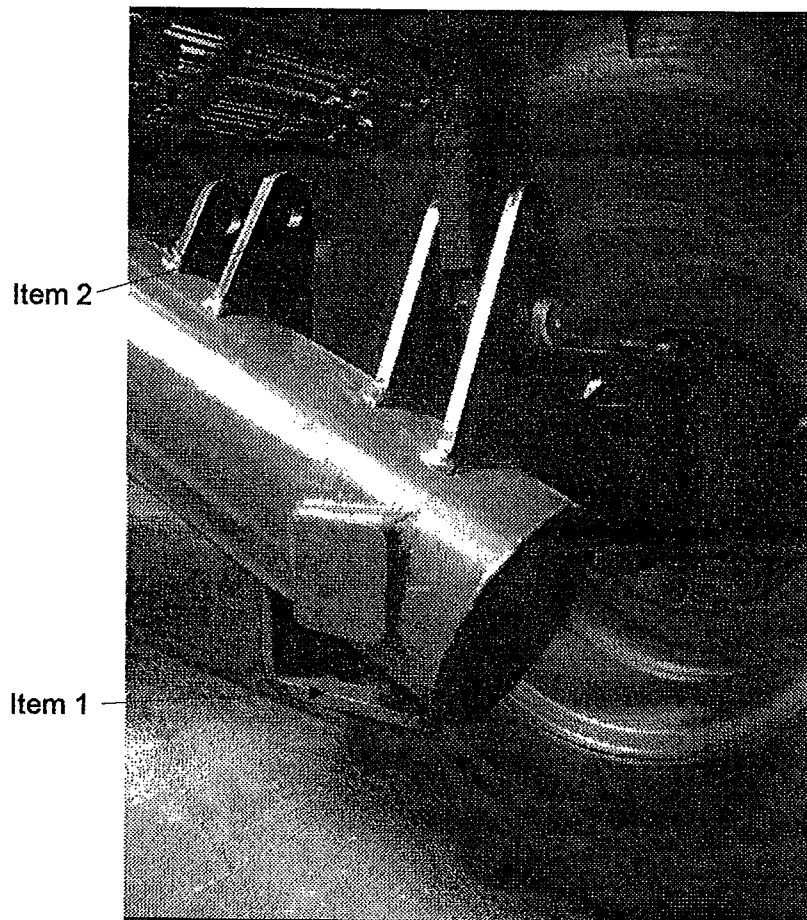


Fig 7.22

Disconnect the hydraulic fittings at the left hand side of the machine and remove the side panels that are attached to the module. Mount the special lifting cradle onto the tines of a forklift truck, which has sufficient lifting capacity. Carefully position the cradle under the module to be removed, aligning the locating dowels on the cradle with the locating holes in the module. Using the forklift, raise the cradle until the dowels are inserted into the locating holes and the forklift is just supporting the module. Insert linchpins through the dowels to secure module to cradle.

7.20 – OPERATING ADJUSTMENTS

Remove fixings from the rear of the module. For the Galaxy module, there are four set studs and nuts on brackets on the underside of the chassis. For the Proclean module this means the removal of the electric actuator. Removing the locking bolt from the left hand module retaining pin. Remove the left hand module retaining pin. Slowly lower the forklift until there is sufficient clearance for the module to be removed. The forklift can now be slowly reversed bringing the module with it. To replace the module reverse this procedure, having first attached the replacement module onto the lift cradle.

The Starflow unit proceeds the Proclean or Galaxy units. The last transfer roller of the Starflow has a scraper. The mounting of this scraper must suit the Proclean or Galaxy unit. (see page 7.11).

After changing the module replace the axle support leg into the rearmost mounting holes (see Fig 7.22)

Ensure that the chassis height is in the correct position for the module being fitted (see Section 5.1).

Transfer star

Situated between Proclean/Galaxy module and the cart elevator, are the transfer stars. This unit is made up of full width and part width star shafts designed to gently deliver and spread the crop into the cart elevator.

The speed of the transfer stars is manual adjusted by a valve positioned half way along the left hand side of the chassis. (Fig 7.22)

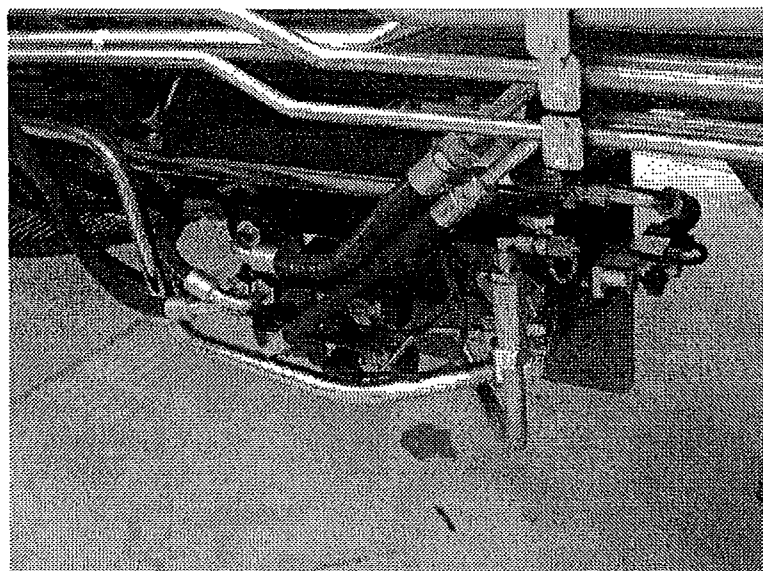


Fig 7.22

7.21 – OPERATING ADJUSTMENTS

The valve is the lowest one in a bank of three (Fig 7.23 item 1). This valve is also used when the transfer star unit is swapped for the optional picking off band.

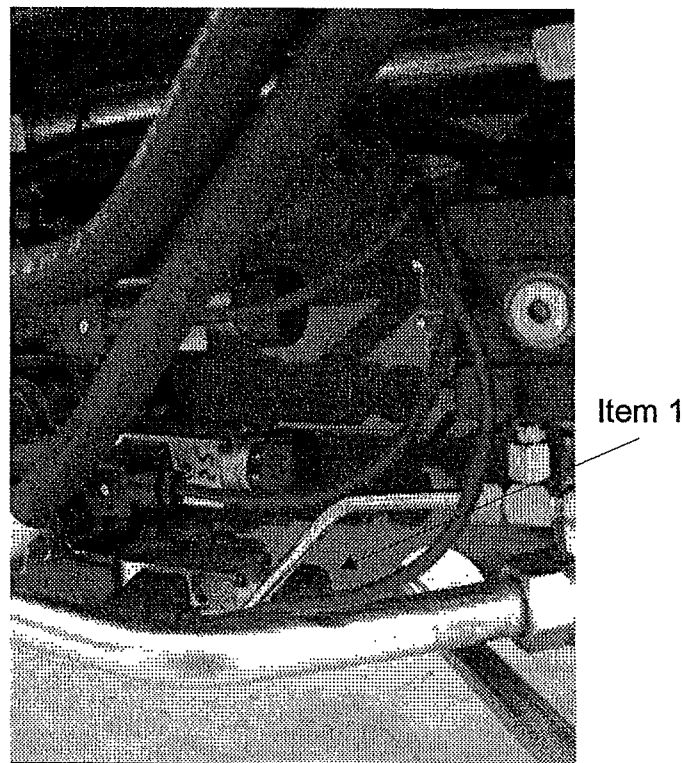


Fig 7.23

The speed should be just sufficient to transfer the crop onto the cart elevator without causing a build up in the area forward of the transfer stars.

Cart elevator

EXTREME CARE MUST BE TAKEN BY THE DRIVER OF THE TRACTOR OPERATING THE HARVESTER TO PREVENT CONTACT OR NEAR CONTACT WITH OVERHEAD POWER LINES. IT IS THE RESPONSIBILITY OF THE DRIVER TO ENSURE ADEQUATE CLEARANCE BETWEEN THE ELEVATOR AND ANY POWER LINES, WHATEVER POSITION THE ELEVATOR MAY BE IN. SEE SECTION 2

Contact your local area electricity supplier for advice regarding clearance under power lines, when operating this harvester.

When the machine is being transported, the elevator must be in the fully folded position

The cart elevator is pivoted in two places, in order that it can be folded for transport, as well as being adjusted for height during work. Both actions are controlled by joystick on the driver's control box (see section 4 Controls).

7.22 – OPERATING ADJUSTMENTS

Normally the inclined centre section should be fully extended while in work, but it is possible to pull this in a little to suit the position of the trailer while opening out a new plot. Always work the discharge section of the elevator as low as possible, in relation to the potatoes in the trailer, in order to minimise the drop.

The cart elevator is driven by a hydraulic motor mounted on the discharge end of the elevator. The elevator is controlled, for on/off and speed by switches in the driver's control box (see section 4 Controls). Adjust the speed of the elevator according to the volume of the crop being handled. Excess speed will throw the crop too hard into the trailer.

8.1 HARVESTING

This chapter is extensive and offers help and advice on:

- Setting off your machine
- Getting the best results during harvesting
- Trouble shooting harvesting problems
- Trouble shooting hydraulic problems
- Trouble shooting electrical problems

Operating speeds

The machine is designed to be operated at an input speed of 440 rpm from the tractor PTO (see section 3). As soil and crop conditions vary, this average speed may have to be adjusted up or down. As you gain experience with your harvester you will establish the best operating speed for your machine.

Each section of the machine can be adjusted for speed. The following table gives an indication of the normal operating speeds for each section, for average working condition and is only intended as a guide starting point.

Section	rpm
Main web.	70
Starflow.	60
Galaxy	60
Proclean	350
Transfer stars	50
Elevator	50
Optional	
POB.	20
Oscillator.	As slow as possible

Starting off your harvester

Before commencing work whether starting off a new machine or starting work in a new field, it is advisable to carry out the following checks.

Machine is correctly connected to the tractor and is level.

Front end of machine is correctly set for the row widths being lifted.

Wheel settings are correct on both harvester and tractor.

Transport chains on floating chassis are released from the transport position.

Transport lock on level leg is in the open, working position.

8.2 HARVESTING

Damage prevention

A machine that is incorrectly adjusted or operated can cause a significant amount of severe damage to the crop. The type of damage found in the sample will usually give an indication as to how the damage was caused and where it is occurring. Examine samples at various points, start in the row in front of the machine and follow the path of the crop through to the trailer. Somewhere between the last undamaged sample and the first signs of damage will be the area causing the problem. The shape and nature of the damage will give clues as to the cause.

When satisfied that tractor and harvester are set up correctly then commence work. Work the machine for approximately 30 or 40 meters and stop, do not run the machine out, leave the crop and soil on all of the sections of the machine. By a series of visual checks you can assess how the harvester settings are performing, and carry out the following checks.

Damage can take various forms. The following comments will help find and cure some of the more common problems. Remember the harvester is not always the culprit.

The speed and efficiency of mechanical harvesting can be greatly improved by good planting techniques and adequate cultivation methods. Visually check behind the harvester, if cut or sliced potatoes are evident the digging depth or disc settings may be incorrect. Potatoes with an uneven cut are normally caused by the shares while a clean straight cut can be caused by the discs.

Check for correct depth of lifting by digging into the lifted rows. Potatoes in the ground indicate depth too shallow. If depth is too deep then excessive soil will be lifted making the separating areas of the harvester work harder. Avoid lifting the unworked soil below the ridge. A small amount of extra depth will equate to many tonnes of extra soil being lifted.

If undamaged potatoes lie on the surface, behind the machine, check their position. If they are to the side of the lifted rows they may have spilled out of the front of the digger web. Check disc position and anti-roll flaps or haulm intake wheels if fitted. If potatoes lie on top of the lifted rows check webs are the correct spec for the crop being lifted, check size of these potatoes against pitch of web. If Starflow unit fitted then the gap between 2nd and 3rd star shafts may be too great.

If damaged potatoes lie on top of the lifted rows, then these may be being lost through the separating areas of the machine. Check the following,

Crushed potatoes may be caused by: - Haulm roller
Starflow clod roller setting
Galaxy clod roller settings

Nipped potatoes may be caused by: - Proclean roller size, speed, angle

8.3 HARVESTING

Looking on top of the soil under the harvester may give an indication as to where these damaged potatoes are being produced.

Inspect the crop on the digger web. If cut potatoes are evident check digging depth and disc settings. If clods and or stones are present at the sides of the web then discs and share may be set too wide and are picking up material from the wheelings. Excessive soil on the digger web indicates depth too deep.

Check these points with the appropriate section of this operator's book. When making adjustments do so one at a time and try harvesting to see the result. More than one adjustment at a time may cause confusion.

Other points to consider

Dry conditions

Keep adequate soil around crop to prevent the risk of damage. Keep the soil in the machine as long as possible to cushion the crop, a combination of digging depth and forward speed will help to achieve this.

Keep agitation and crop movement down to a minimum.

Set depth wheels to exert lightest amount of down pressure so as not to disturb the ridge or bruise the crop.

Wet conditions

Set digger web slightly faster than ground speed

Clod conditions

Open clod rollers on starflow and/or galaxy

Open gap between 2nd and 3rd star shafts in starflow unit

Fit smaller Proclean rollers

Stone conditions

In stony ground, a stone can become wedged between the share blades preventing penetration.

Make sure disc are kept sharp so that they cut the haulm and prevent rapping and blockages around front roller mountings

Damage prevention

Do not hold the crop on the Proclean unit longer than necessary as this may cause damage.

Run the cart elevator at a suitable speed to take the crop away smoothly without over loading the flights or throwing the crop into the trailer.

8.4 HARVESTING

Getting the best results during harvesting

Advice and hints to help accomplish maximum output with minimum damage while harvesting your crop.

Topper - Haulm Pulveriser.

If using rear mounted Topper ensure tractor wheel / tyre sizes are not too wide as to crush the side of the rows.

Ensure wheel widths are at correct settings for your row widths and system.

Ensure rotor blades are set at the correct configuration for your row widths and system.

Ensure rotor blades are in good condition to pulverise, and also give suction.

When in desiccated haulm do not cut the haulm too short. Ensure you leave enough length i.e. 6 to 8 inches, this will help with haulm extraction in the harvester.

Tractor.

Ensure wheel widths are correct settings for your row widths and system.

Ensure tyre widths are not too wide as to crush the side of the ridges.

Ensure tractor drawbar pin is not too long so that it can drag and bunch up haulm, which in turn will go in the harvester in large bunches and damage crop at the haulm extraction point.

Ensure correct forward speed of tractor, to match the conditions and harvester capabilities.

Harvester.

Ensure drawbar is not too low so that it can drag and bunch up haulm, which in turn will go in the harvester in large bunches and damage crop at the haulm extraction point.

While standing on level ground and with the harvester connected to the tractor, ensure that the drawbar eye is adjusted so that the elevator is parallel to the ground. This ensures that the machine is at the correct angle for haulm rollers and separators to work at maximum efficiency.

Ensure jack stand is not interfering with haulm, so that it can drag and bunch up haulm, which in turn will go in the harvester in large bunches and damage crop at the haulm extraction point. If necessary remove stand to alleviate this problem, but ensure jack stand stays with the machine.

8.5 HARVESTING

Shares

Ensure shares are set at correct width settings for your row widths and system.

Make sure the outside corners are cut off the outside share blades, this will help to stop the haulm that the discs have pressed into the ground wrapping around the front corners of the blades, causing a restriction.

Make sure chamfer on front edge of share blades is not too acute as to cause a restriction or bulldozing effect.

Ensure that the shares are clean and shiny before commencing work. This will reduce drag and help with the flow into the front of the machine.

Make sure the countersunk bolts heads do not protrude above the blades.

Ensure stone flaps are parallel to the blades and deliver the crop onto the web and not into the web.

Make sure, in wet heavy conditions the share area is kept clean. If you allow a build up of soil under the stone flaps, it is possible for the stone flaps to stand up, causing flow and damage problems to the crop.

It is also essential to keep the share frame area clean in wet heavy conditions. This will prolong the life of the web, reduce drive roller wear and reduce the load on the main web drive system.

If using a centre share blade, ensure the blade is parallel with all the other blades. This will maintain an even depth across the bed.

Ensure the correct depth settings when moving to different fields and/or varieties.

Ensure the correct share frame and blade configuration for your conditions. 1 piece, 2 piece, 3 piece etc. usually in lighter condition a 3 piece would be used.

As soon as the harvester has finished work, while the shares are still bright, apply a film of grease over the working surfaces. This will reduce corrosion, maintain the surface finish, and assist flow when the machine starts work next season.

Discs.

Ensure discs are set at correct width settings for your particular system.

Ensure discs are set to the correct depth. Too much depth will cause soil to slab and encourage soil to stick to the discs and prevent turning.

Make sure that disc edges are kept very sharp so haulm is easily cut, and that the disc depth does not have to be set deeper to compensate for not cutting haulm.

8.6 HARVESTING

In wet condition ensure that a wider gap is set between the discs and the share blades. Approximately 25 mm.

If crop is rolling back down the web and hitting edges of discs, causing damage, slow down web speed slightly so that there is more soil to carry the crop away.

Make sure discs are being scraped clean, this will also help flow into machine.

As soon as the harvester has finished work, while the discs are still bright, apply a film of grease over the working surfaces. This will reduce corrosion, maintain the surface finish, and assist flow when the machine starts work next season.

Anti-roll flaps / Feeder wheels (optional).

Make sure that the middle anti-roll flap fills the gap between the two centre discs and does not foul the discs and stop them turning.

If using a non-side delivery topper, ensure an even amount of haulm and trash across the width of the bed, this will help reduce damage to crop by feeding the haulm extraction consistently.

Make sure that anti-roll flaps are not too long and trail up the web. This may cause two problems; crop sitting on top of rubber flap a long while and/or forming a point where crop could spill under the flap.

If you experience problems with haulm rapping around front roller mountings the feeder wheel mountings are adjustable on their mounting bridge. They can be adjusted forwards and sideways to position them for optimum performance. If this problem is allowed to continue it may cause haulm to build up and possibly affect the next row by dragging the crop out or, lifting the digging depth out, causing damage to the crop.

All bolts in feeder wheels must be countersunk and flush as to not damage crop.

Ensure constant turning of feeder wheels at all times. This feeds the haulm constantly in to the machine and will reduce damage at the haulm extraction points. The downward pressure exerted by the wheels is adjustable. The amount of tension applied is a balance between too little so that wheel stop turning and not enough so that the wheels are unable to lift when required to.

It is important that the outside blades of any topper used are in good condition for length. This will make sure that the haulm is not too long on the out sides of the rows. If too long a length of haulm is left at the side this will affect the feed into the machine and could lift the feeder wheels off of the web, causing them to stop turning and block the mouth of the machine.

8.7 HARVESTING

Depth Control

Ensure depth wheels are set to the correct width settings for your particular system, but do double check as sometimes with ridging up during the growing season the ridge positions can change slightly.

Do not apply too much pressure on the depth. As a result of too much pressure clods could be produced and soil made to stick to the crop. If this were to happen more agitation would have to be used, this could equal more damage. Only enough pressure on the wheel to keep them turning is necessary in most conditions.

Oscillator (if fitted)

The first set of fingers should be set in a higher position than the second set. The motion of the oscillating fingers should gradually disturb the ridge. If fingers are set too low then a restriction will occur causing loose of out put.

The speed of the fingers is adjustable. Ensure enough speed to result in an even spread of material across the width of the machine to allow the separator and haulm extraction areas to work to their maximum capacity.

Clod Mat (if fitted)

Clod mats are adjustable for angle. This gives a restriction for the crop and soil to flow through. Ensure that the blocks are not over adjusted so that damage is caused, by crop rubbing on web bars. Or that the flow of material through the blocks is restricted and that haulm and debris is bunched up which can cause problems at the haulm extraction points.

It is important that an even spread of material, across the width of the machine, is maintained to allow the separator and haulm extraction areas to work to their maximum capacity.

Agitation

Over use of the agitators is one of the main causes of damage and will result in roll back and bounce of the crop, causing bruising etc. Use the minimum amount of agitation that you can.

There can be up to two agitator shafts fitted in an Enterprise. The rear most mounted unit is called the 'First Agitator' and the foremost unit is called the 'Second Agitator'. The amount of agitation can be adjusted in two ways. Firstly by speed of rotation of the agitator shaft and secondly by adjusting a control roller up and down which lifts and lowers the web onto the agitator see section 7.3).

When starting to harvest it is better to begin with minimal agitation. If you have two shafts fitted then disconnect the drive chain to the front shaft and start off with only one agitator shaft working. Add more agitation as conditions warrant and only use the 'Second Agitator' when conditions become very heavy.

8.8 HARVESTING

In most conditions set the first agitator rotating at a high speed with the control rollers allowing the main web to just touch the agitator rollers, this gives a ripple effect, which sieves the soil without bouncing the crop high above the web.

When having to use first and second agitators, it is most important that the agitators are synchronised. To achieve this, set one shaft so that one roller is in the 12 o'clock position and on the other shaft the web is supported across two rollers. Connect and adjust drive chains to maintain this relationship.

Levelling Leg

It is important to maintain the attitude of the machine level with the horizon so that an even spread of material, across the width of the machine, is maintained to allow the separator and haulm extraction areas to work to their maximum capacity.

Main Web

The main web speed in conjunction with ground speed is essential for the harvester to work efficiently. Incorrect web speed can result in damage and poor harvester performance.

If web speed is too fast this will result in roll back and poor take off after the share, either slow down the web or increase forward speed.

If web speed is too slow this will result in the machine being overloaded which will cause poor performance of the separating areas, which will put undue stress on the mechanical components reduce life of the machine and put excessive amounts of soil and haulm into the discharge elevator. To overcome this, increase web speed or reduce forward speed.

There must be enough web speed for the crop to be carried over the haulm roller and not into the haulm roller.

Check web clips and joiners daily before commencing harvesting.

Haulm Rollers

The gap between the haulm roller and the main web must be set to a minimum. The best way to achieve this is to turn the web joiner next to the haulm roller, then adjust gap, so that the haulm roller is just and only just missing the joiner.

To reduced the risk of damage to the crop, it is best to let the crop land on the stars past the haulm extraction point, and let the haulm be guided back into the pinch point of the haulm roller by the haulm fingers and extracted.

8.9 HARVESTING

Haulm Fingers

Position out of the way for minimum damage. Only apply tension to fingers in very wet conditions or trying to get maximum output of machine.

Again ensure enough web speed for crop to clear haulm roller.

Check rubber covers on fingers daily before commencing harvesting.

Star-Flow

The star-flow speed is essential for the harvester to work efficiently. Insufficient speed will cause a nipping effect on crop. Excessive speed will propel soil/crop over the separating area.

Too big a gap between fourth row of stars and clod roller can cause nipping. While too small a gap reduces efficiency.

Star-Flow/Clod Roller

Ensure the correct shape of clod roller is being used for your requirements. (i.e. round, square, hexagonal). The shape of the clod roller affects the level of extraction of material. The round roller is the least aggressive; the hexagonal roller will extract more, while the square roller is the most aggressive.

Ensure the gap between clod roller and star shaft is not too big so that it takes haulm out as well as stone and clod, as this may cause a restriction and stop the flow. If there is any restriction whatsoever, caused by the clod roller, it must be adjusted accordingly or reversed.

In many circumstances it is better to drive the clod roller in reverse (the same rotation as the stars), with a large gap between the roller and the star shaft. This can achieve two things, no flow restriction plus it enables the next separator galaxy/proclean to work efficiently by taking clod/stone/haulm a little at a time at each separating area. Note that the clod roller scraper will have to be reversed as well.

Forward speed of harvester is essential to maximise the efficiency of this separator.

As soon as the harvester has finished work, while the clod rollers are still bright, apply a film of grease over the working surfaces. This will reduce corrosion, maintain the surface finish, and assist flow when the machine starts work next season. Failing to do so will make the clod roller very greedy until rust is worn off.

Galaxy

Ensure the correct shape of clod roller is fitted for your requirements. (i.e. round, square, hexagonal). The shape of the clod roller affects the level of

8.10 HARVESTING

extraction of material. The round roller is the least aggressive; the hexagonal roller will extract more, while the square roller is the most aggressive.

The speed of the galaxy is essential. Excessive speed causes propulsion of crop/soil/stone over the separator instead of the separator working to its maximum efficiency. If the speed is set too slow this can cause nipping of crop.

If you have brushes fitted over the galaxy, only use them in very bad conditions.

As soon as the harvester has finished work, while the clod rollers are still bright, apply a film of grease over the working surfaces. This will reduce corrosion, maintain the surface finish, and assist flow when the machine starts work next season. Failing to do so will make the clod roller very greedy until rust is worn off.

Proclean

The speed of the proclean rollers is essential; too slow will cause nipping, contrary to most beliefs. Speed must be enough to keep crop virtually clear of rollers for minimum damage.

The angle of the proclean is also very important, this can be adjusted from the tractor cab. The amount of angle will directly relate to the amount of time the crop spends on the rollers. If the angle is down hill then crop travels across quickly, this is used in the lighter conditions. To hold the crop on the rollers longer, so that more time is available for the roller to carry out their cleaning, then the rollers must be adjusted so that they run up hill.

If you have brushes fitted over the proclean, only use them in very bad conditions.

Different roller diameters are available to suit to conditions being worked. By changing diameter this effects the gap which extracts waist material through the proclean. A small gap for dry light condition to a large gap for heavy conditions.

Transfer stars

Do not use excessive speed as this propels crop into rear elevator panel. Conversely not enough speed will cause a restriction in the flow through the machine, where the spreader stars are supposed to be taking the crop away from the separator.

Elevator

The correct elevator speed is essential, the objective is to have the speed as slow as possible, filling every compartment with crop, The more crop there is in each compartment the better as far as damage is concerned, but fast enough not to cause crop to spill out over the top of the flights and roll back, or cause a restriction at the bottom of the elevator. Too much crop at this position can cause nipping as the web goes around the corner.

8.11 HARVESTING

When in work, apart from opening up, the elevator's middle section should be kept in its fully folded out position. This reduces the angle, and the chance of the crop rolling back.

If needed, an elevator lowering kit is available. This reduces the angle of the elevator's middle section allowing it to reach further into the trailer.

A box filling chute can be obtained as an option, if needed.

Wheels/Axles

In normal/dry conditions, the harvesters inside wheel should be set away from the row to reduce compaction of the ridge.

In very wet conditions for ease of pulling the machine, the inside wheel can be set to run directly behind the tractor wheel, bearing in mind the width of the tractor wheel. The most outward part of the inside wheel must not protrude outside the tractor wheel.

Picking Off Band (if fitted)

POB web speed must be fast enough to take crop away from separator rollers. The speed also must not be too excessive as to propel crop into discharge point.

POB rear drop into cart elevator or onto return webs must be well cushioned to reduce damage.

Most Important

Ensure all bolt heads are domed and correct way having no threads or nuts in crop flow area.

It is most important that the tractor fly lead to harvester gives a constant 12v supply. If not this can make depth/steering sensor fail to work at maximum efficiency.

Hydraulic output from tractor must also be constant, but most important is the return. It must be free flowing at all times or problems with depth etc will occur. To test for this all you have to do is place share into auto (with transport chains off) when floating chassis is on the ground press tractor accelerator to max. If shares lift you have a return problem, if not you are ok to work.

Richard Pearson offers a service through its 'Tech centre' for damage assessments on your machine using a digital potato.

8.12 HARVESTING

Trouble shooting hydraulics problems

See section 9.2 for general hydraulic maintenance. If it becomes necessary to carry out any repairs on the harvesters hydraulic system, the work should be carried out by a competent engineer capable of this type of work. Consult your authorised Richard Pearsons Ltd. dealer if you need further assistance.

BEFORE ATTEMPTING ANY HYDRAULIC REPAIRS ENSURE THE 'HYDRAULIC RESIDUAL PRESSURE DUMP PROCEDURE' IS CARRIED OUT.

Hydraulic residual pressure dump procedure

The following procedure outlines the method of relieving the residual hydraulic pressure.

It is essential that this procedure is carried out before any maintenance or repairs are attempted.

1. Make sure that the cart elevator is in the fully folded position.
2. Place chocks to the front and rear of both wheels to prevent the machine from moving.
3. Either lower the floating chassis to the ground, or put it into the transport position (see section 2.10).
4. Lower the drawbar stand on the drawbar and disconnect the machine from the tractor, leaving the hydraulic and electrical connection still attached. Move the tractor forward so that the machine drawbar is just clear of the tractor drawbar jaw.
5. With the levelling cylinder transport lock valve in the open position, lower the machine to its lowest position. **LEAVE THE TRANSPORT LOCK IN THE OPEN POSITION.** (see section 7.2).
6. Switch off the tractor engine.
7. Operate all switches (see section 4 Controls) on the driver's control box, in turn, to all positions and return them to their respective neutral positions.
8. There should now be no residual pressure remaining in the machine's hydraulic system, and after disconnecting the hydraulic and electrical connection from the tractor, any work involving dismantling the hydraulic components can be carried out.

8.13 HARVESTING

Tractor side

Ensure that the hydraulic requirements laid down in section 3 are met. That the minimum and maximum oil flow supplied by the tractor are correct.

Ensure correct setting of the tractor valve bank for open or closed centre hydraulics. (See section 5.5).

When a function does not operate correctly, firstly check that all transport locks and chains are in the working position. (see sections 2.10 and 7.2). Secondly check that the problem is not an electrical problem. This is carried out by switching all electors off and manually operating the service. If the service functions then the problem may be electrical. See the 'Trouble shooting electrical problems' later in this section.

If the valve does not work then the fault may need the attention of a qualified Richard Pearsons Ltd engineer. Consult your authorised Richard Pearsons Ltd. dealer for further assistance.

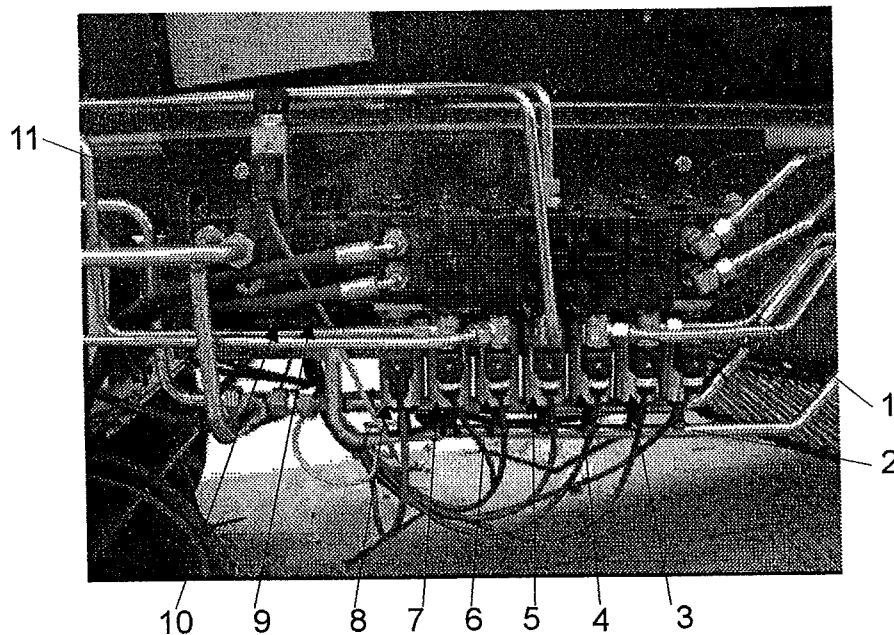


Fig 8.1

ITEM	DESCRIPTION
1.	Relief valve
2.	Lanes adjuster
3.	Share left hand
4.	Share right hand
5.	Elevator main section
6.	Elevator swan neck
7.	Level leg
8.	Axle steering
9.	Inlet section
10.	Elevator motor speed control

8.14 HARVESTING

11. End plate with open/closed centre screw

If a service functions correctly, but exhibits strange tendencies, such as the cylinder extending when not being operated, this is a classic symptom of too much back pressure in the return line back to the tractor. There must be no restriction in this return oil. Ensure that there is a full flow return, or even better return straight back into the tractor gearbox. Consult your tractor's handbook or dealer for further information.

In the end section of the valve bank is a relief valve, this is factory set and should not be adjusted.

If there were an electrical or an electrical failure, e.g. loss of cart elevator remote speed control, then it would be possible to carry on working by operating the manual speed adjustment knob.

If a catastrophic electrical failure occurs, then it is possible to operate all the tractor side valves manually. This will enable you to fold up the machine, into the transport position, apply all safety locks, and drive to the end of the field, or back to the workshop to arrange repairs.

Pump side

There are few settings or adjustments that can be carried out on the pump side hydraulics.

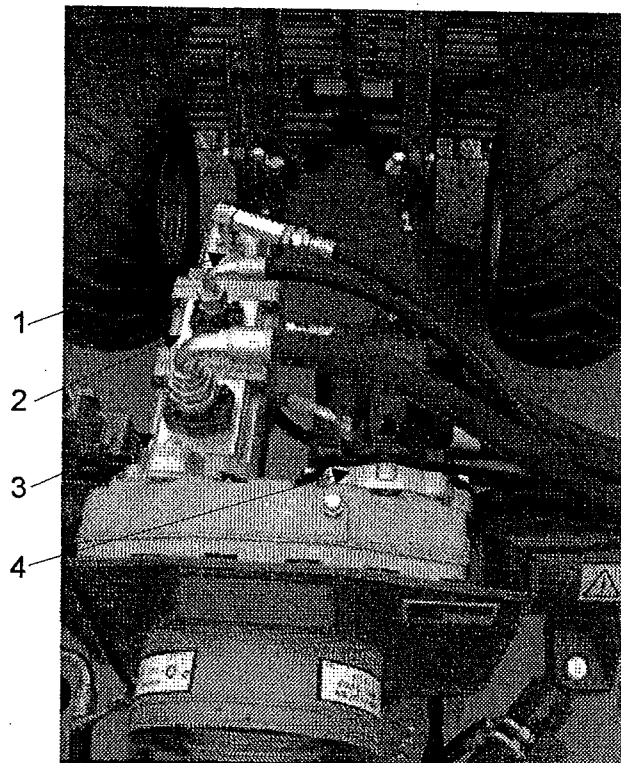


Fig 8.2

ITEM	DESCRIPTION
1.	Starflow gear pump.
2.	Agitator and transfer stars gear pump.
3.	Proclean gear pump.

8.15 HARVESTING

4. Main web variable pump.

Main web pump – this is factory set and should not be adjusted without expert knowledge, as damage will be caused to the internals of the pump if set incorrectly. If this pump becomes suspect then consult your authorised Richard Pearson Ltd. dealer for further assistance.

Main web speed adjusting valve – (Fig 8.3) this valve is set to give a minimum speed of the main web of approximately 30 rpm when the speed control in the drivers control box is set to minimum. This is done by adjusting the manual adjuster to give the required rpm and the adjuster is locked off using the locking ring. The rest of the speed set up is done electrically and is described on page 8.18. In the valve is a relief valve, this is factory set and should not be adjusted.

Agitator, Transfer stars/POB, and Starflow speed adjusting valve – (Fig 8.3) for each of these controls, the manual adjuster is set to zero with the speed control in the drivers control box is set to minimum. The rest of the speed set up is done electrically and is described on page 8.18. In the valve is a relief valve, this is factory set and should not be adjusted.

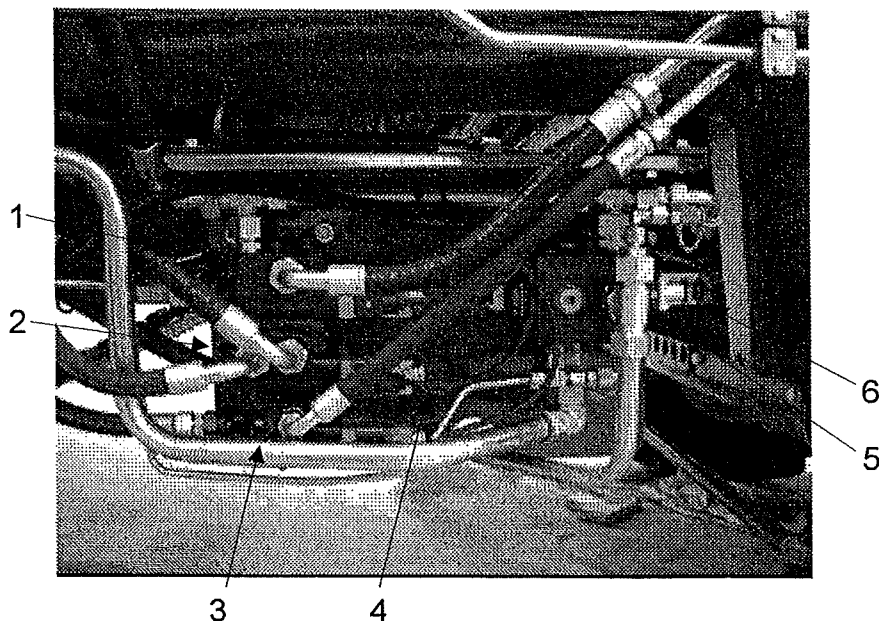


Fig 8.3

ITEM	DESCRIPTION
1.	Starflow speed control valve
2.	Agitator speed control valve
3.	Transfer stars/P.O.B. speed control valve
4.	Manual control knob
5.	Main web speed control valve
6.	Manual control knob and locking ring

8.16 HARVESTING

Proclean – the speed of this unit is controlled by a manual knob on the valve mounted at the rear, left hand side of the machine (Fig 8.4 item 1)

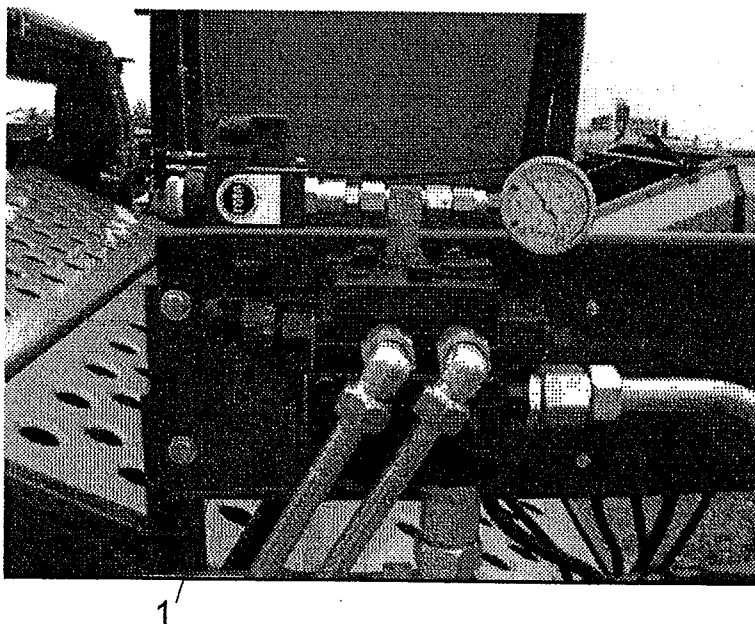


Fig 8.4

The other controls in this circuit are electrical and are described on page 8.24

Seal kits are available for all cylinders, valves, pumps and motors. If it should be necessary for any repairs to be carried out, a qualified Richard Pearson Ltd. engineer should complete them. Consult your Richard Pearson Ltd. dealer for further assistance. If a problem of seal failure persists then an investigation should be carried out to establish the cause.

Pipes and fittings should not be over tightened as this will result in damage to the seal faces within the fittings. Suppliers recommend finger tight plus half a turn.

If there is an electrical failure on any of the pump side speed control valves, then it is possible to continue harvesting. Set the required speed by operating the manual knob valve, and carry on working, until a full repair can be arrange.

If the any of the above condition still exists then the fault may need the attention of a qualified Richard Pearsons Ltd engineer. Consult your authorised Richard Pearsons Ltd. dealer for further assistance."

8.17 HARVESTING

Trouble shooting electrical problems

In general a very high percentage of electrical problems are traced down to be course by a loose or faulty wiring connection.

If you suspect an electrical fault follow these simple steps to confirm. Switch all electric's off and operate the hydraulic valves manually, to prove their operations. If valve functions correctly the electrics may by at fault. Switch electric's on and operate the suspect function in both the manual and automatic (if appropriate), to see were a potential problem may lie.

If a function is not operating correctly and you suspect an electrical fault firstly check the multi pin plug and socket at the front of the harvester under the triple gear pump and the multi pin plug and socket on all of the electric boxes mounted around the harvester. Make sure that no contacts are bent or pushed back in to their respective housings.

Check that the power cables are correctly connected to the tractor (see section 4.1) and that the tractor's alternator is functioning correctly.

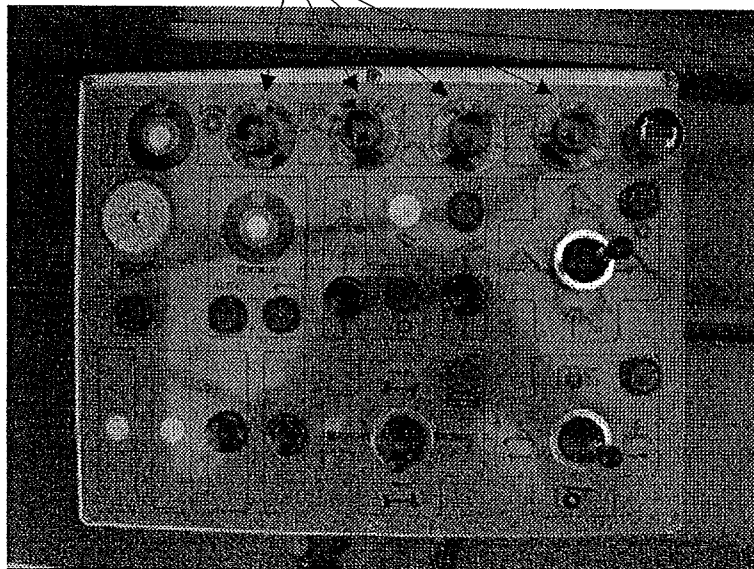
It is important to maintain a good 12 volt supply for the electrical circuits to work properly.

Outlined below are some of the common problems that could be encountered.

Remote speed controls.

The main web, agitators, starflow and elevator (also optional picking off band and proclean) sections of the machine are remotely controlled for speed, via speed dials in the drivers control box. These speed dials are controlled by a speed card located inside the drivers control box, and are factory set and in normal circumstances should not require any adjustment.

Speed dials



8.18 HARVESTING

Fig 8.5

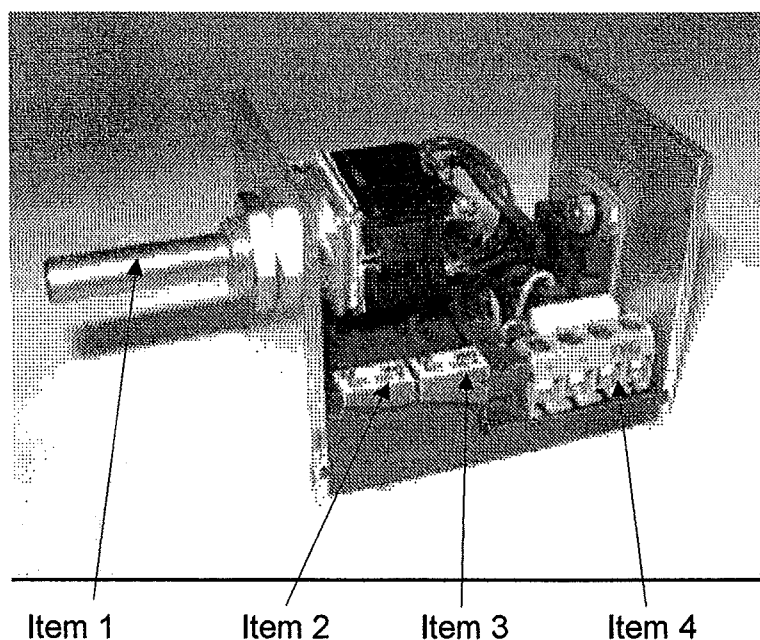


Fig 8.6

Fig 8.6 shows a speed card removed from the drivers control box. Item 1 is the spindle. Item 2 is the maximum speed trim control. Item 3 is the minimum speed trim control. Item 4 is the electrical connection terminal.

Should it be necessary to reset or trim the speed card, then the following procedure should be followed.

To set the speeds of a particular service that service must actually be running.

Open the lid of the drivers control box and slowly turn the lid over. Do not apply any force to the wiring loom that connects the switches mounted in the lid of the box and the base of the box otherwise connection may be broken.

Select the service to be adjusted. To set minimum speed of the service turn the speed dial to minimum but not off. To reach the minimum the dial should be turned anti-clockwise until resistance is felt. If the control is continued to be turned, a click will be heard and the speed control will then be in the off position. Next, while watching the service, adjust the minimum speed trim control slowly and a small amount at a time (Fig 8.6 item 3) until the desired minimum speed is obtained. Turning the adjuster screw clockwise increases while anti-clock decreases.

To set maximum speed of the service turn the speed dial to maximum. To reach the maximum the dial should be turned clockwise to the end of its travel. Next, while watching the service, adjust the maximum speed trim control slowly and a small amount at a time (Fig 8.6 item 2) until the desired maximum speed is obtained.

Once happy with the setting carefully replace the lid of the control box and tighten all screws.

8.19 HARVESTING

It is important to maintain a good 12 volt supply for the electrical circuits to work properly, i.e. depth sensors.

Adjusting depth sensors.

The depth control system of the Enterprise harvester works by a depth wheel running on top of each row. Each depth wheel, as it rises and falls following the contours of the ridge, operates a target finger in front of two proximity switches. This is converted into an electrical signal, which is sent via a timer circuit to the hydraulic control valve, which operates the lift and lower cylinders of the shares. The left and right cylinders work independently thus enabling independent depth control for each row. Fig 8.7 shows the proximity switches mounted in the depth wheel mounting brackets.

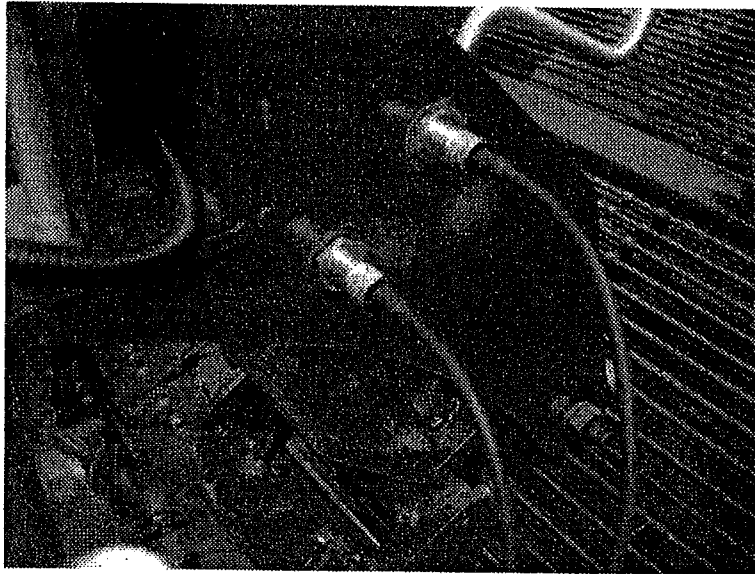


Fig 8.7

The proximity switches are factory set and in normal circumstances should not require any adjustment. Should it be necessary to readjust, then the following settings should be obtained. A = 30 mm B = 74 mm C = 3 mm

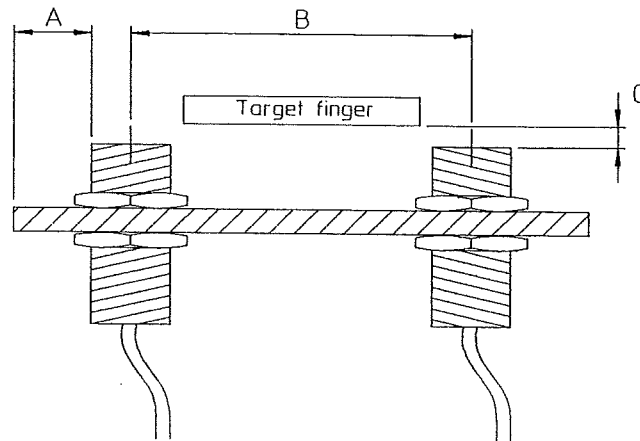


Fig 8.8

8.20 HARVESTING

Proximity sensors not working correctly

These instructions apply to both the share depth and self centring steering sensors.

Symptoms.

All tests should be carried out with the tractor engine running at normal working speed, with the PTO drive disengaged and the PTO shaft disconnected.

When switched into auto mode the service does not operate or only intermittently. The service operates correctly in manual mode.

Action.

Set the faulty service into auto by moving the relevant switch on the drivers control box. The green light on the rear of the proximity switches should illuminate and remain so whilst the service is switch to auto.

Trigger each sensor in turn by placing a metal object in front of the sensor (i.e. a screwdriver). As each sensor is triggered the red light should illuminate and remain so, until the metal object is removed.

If either or both of the lights do not illuminate correctly, then replace that sensor with a new one.

No or poor operation of automatic share depth control

Symptoms - Uneven share depth operation. When share is fully in the raised position and the auto function is selected on the drivers control box, one only or neither of the share cylinders operate. Share depth control operates correctly in manual mode.

All tests should be carried out with the tractor engine running at normal working speed, with the PTO drive disengaged and the PTO shaft disconnected.

Action - Check the position of the share depth proximity switches, making sure that both pairs of sensors are set to the correct positions (see 8.19 for adjustment).

Check the operation of the proximity sensors as described above.

If the auto depth control still will not function correctly then check the multi pin plug and socket at the front of the harvester under the triple gear pump and the multi pin plug and socket on top of the electric box mounted above the tractor valve bank situated on the right hand side of the harvester behind the guard panel. (Fig 8.9), make sure that no contacts are bent or pushed back in to their respective housings.

8.21 HARVESTING

If after checking the position and operation of the sensors, the share operation is still incorrect, remove the cover from the electrical box mounted above the tractor valve bank situated on the right hand side of the harvester behind the guard panel. (Fig 8.9).

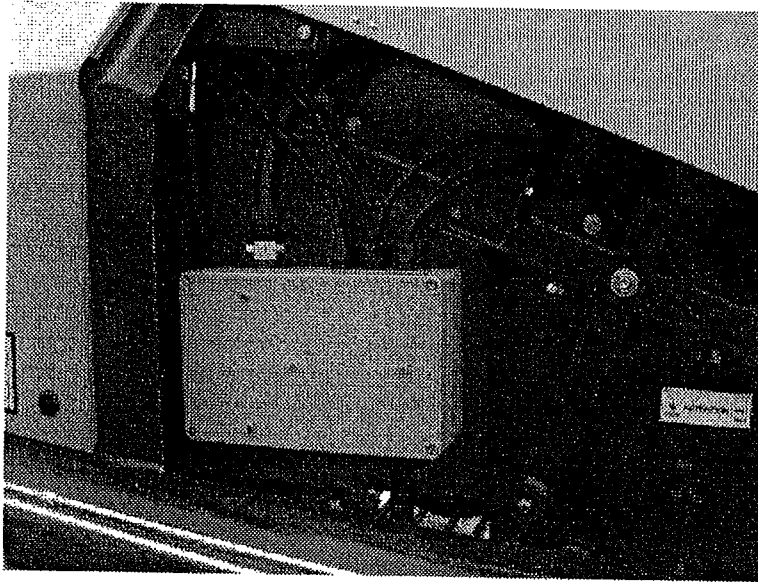
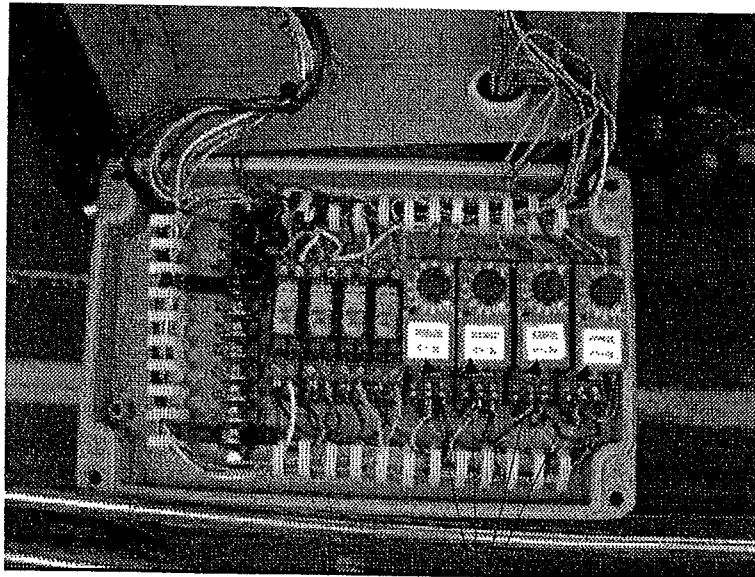


Fig 8.9

Inside the box mounted on the lid is a row of 4 timer relays. (Fig 8.10 item1).



Item 1

Fig 8.10

8.22 HARVESTING

The timers are normally an orange colour and each have a timer adjuster dial and an indicator light. (Fig 8.11). The timers are adjustable and have a range of 0.1 to 3 seconds on a scale of 0 to 10. Ensure that all four timers are set to the same value.

Reducing the timer delay value (turning anti-clockwise) makes the share depth more sensitive to ground level variations, whilst increasing the value (turning clockwise) reduces the sensitivity of the depth control.

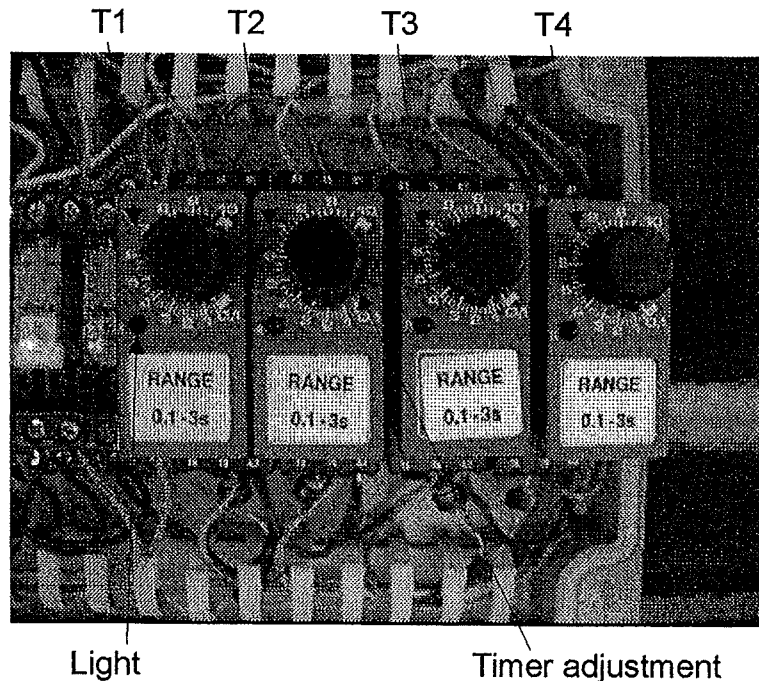


Fig 8.11

Check the output of the timer relays by repeating the proximity sensor operation test described on page 8.20, but observe the red lights on the timer relays. Commence by triggering the left hand up sensor, this should illuminate timer relay T4. The left hand down sensor, this should illuminate timer relay T2. The right hand up sensor, this should illuminate timer relay T3. The right hand down sensor, this should illuminate timer relay T1. If any pair of proximity sensors illuminate the wrong timer relays, then transpose the two connectors at the proximity sensor.

If share operation is still not correct, make sure the share depth control is switched to auto. Using a voltmeter, check that there is an input of 12 volts at point 15 on each of the timer relays (Fig 8.12).

Trigger each timer relay in turn, and check for an output of 12 volts at point 18 (Fig 8.12) and that the red light is on.

If there is no output on any of the timer relays check and ensure that the earth connection at A2 (Fig 8.12) is well made and that there is continuity.

8.23 HARVESTING

Having carried out these checks and adjustments, if any of the timer relays is not giving an output, then it should be replaced.

In the case of all timer relays not giving an output it is unlikely that they are all faulty unless the electrical supply voltage has exceeded 20 volts.

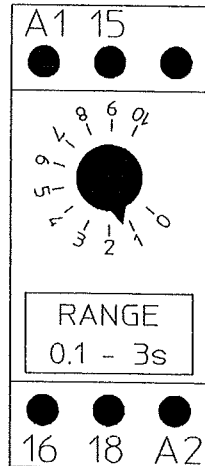


Fig 8.12

If the fault persists then check the connectors on the relevant hydraulic valves by once again triggering each proximity sensor in turn and checking for 12 volts output on the yellow wire of each connector block.

If the condition still exists then the fault may need the attention of a qualified Richard Pearsons Ltd engineer. Consult your authorised Richard Pearsons Ltd. dealer for further assistance.

No electrical control of the self centring steering

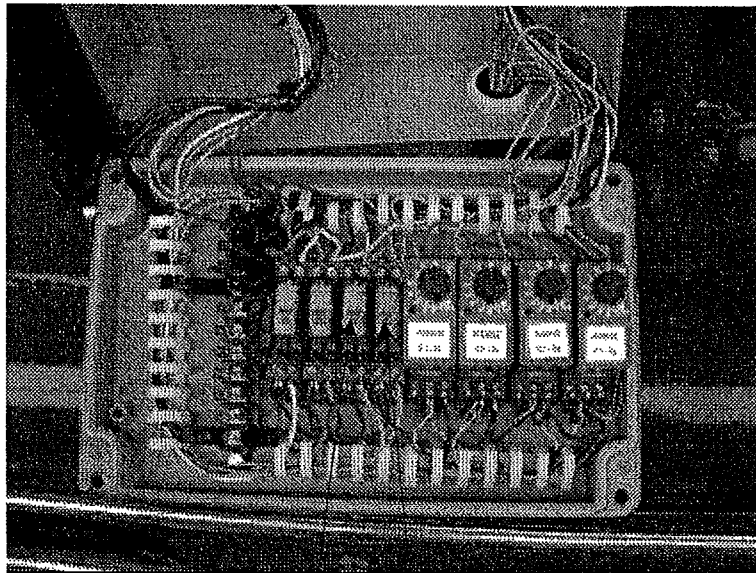
The self centring steering operates by a target finger between two proximity switches. When the machine is steered to the left or right then the target finger is moved to cover one or other of the proximity switches. When the self centring switch in the drivers control box (section 4), an automatic circuit is engage. The proximity switch that is covered by the target finger sends a signal to the hydraulic control valve for the steering sending it towards the centre position. When the wheels are in the centre position the target finger is between the two proximity switches and the signal is cancelled.

If the auto centre is not functioning then check that proximity switches are set correctly, 100 mm between centres of switches and 3 mm from target finger.

8.24 HARVESTING

Check that proximity switch lights are working correctly (see page 8.20). These prove whether the proximity switches are functioning, if not then replace.

If after checking the above points the self centring steering is still not working correctly, remove the cover from the electrical box mounted above the tractor valve bank situated on the right hand side of the harvester behind the guard panel. (Fig 8.9).



Item 2 Item 1

Fig 8.13

Inside the box mounted on the lid is a row of 4 relays, which are transparent. (Fig 8.13). Items 1 and 2 are relays for the steering self centring.

Item 1 is for steering right and item 2 is for steering left. Check the output of the timer relays by repeating the proximity sensor operation test described on page 8.20, but observe the relays. By triggering the proximity switches the relays should be seen to be latching in place, if either does not then replace with new.

Proclean reverse timer circuit

The proclean is hydraulically driven by two motors and if overloaded or blocked is designed to put the drive into reverse for a short period to unblock itself. The reverse operation is engaged by a pressure sensing switch, sensing the operating pressure in the drive motors. This trigger point for pressure is adjustable on the pressure switch (Fig 8.14 item 2) by an adjusting knob (Fig 8.14 item 3) and should be set at 70 bar for normal operating conditions.

8.25 HARVESTING

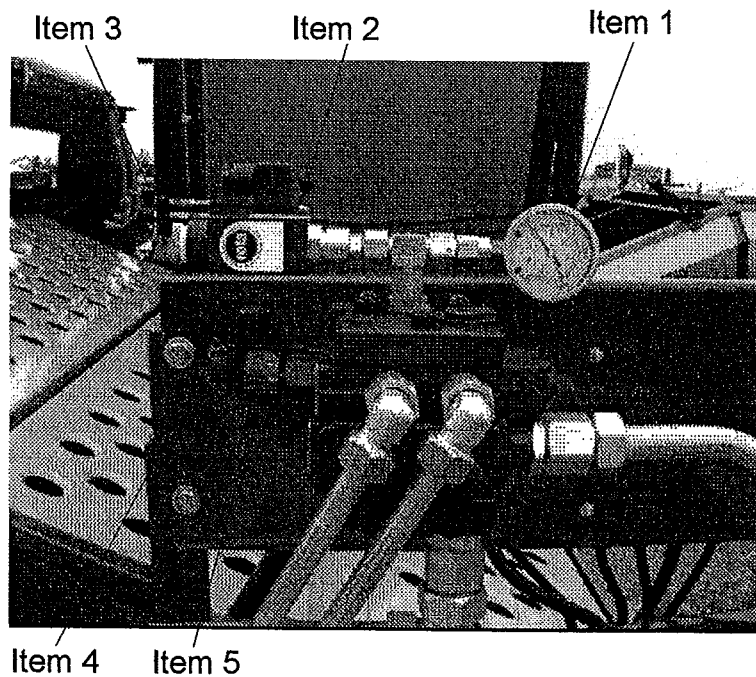


Fig 8.14

During operation, if the pressure setting is reached, an electrical signal is sent to the proclean timer relay. This relay has two settings, one for input signal, one for output signal. Each signal is adjustable for time delay from 0 to 10 seconds, and are both factory set at 1 second.

The input signal is on a timer to smooth out any pressure spikes, while the output signal is on a timer to keep the proclean in reverse for an agreed amount of time (normally enough time to allow a blockage to clear). When this timer has completed its cycle then the proclean will return to normal rotation.

If the proclean will not go into its reversing cycle when a blockage occurs, this could be because the pressure switch or timer relay are at fault.

Check pressure switch by adjusting it to its lowest setting (Fig 8.14 item 3), turn anti-clockwise. Run proclean and check that the light on the timer relay lights up. The timer relay can be found in the electrical box mounted behind the proclean hydraulic control valve (Fig 8.15) the timer relay is orange in colour and has two knobs on for adjusting timer settings. The timer light can be seen in Fig 8.16.

If the light does not light up then suspect the pressure switch.

8.26 HARVESTING

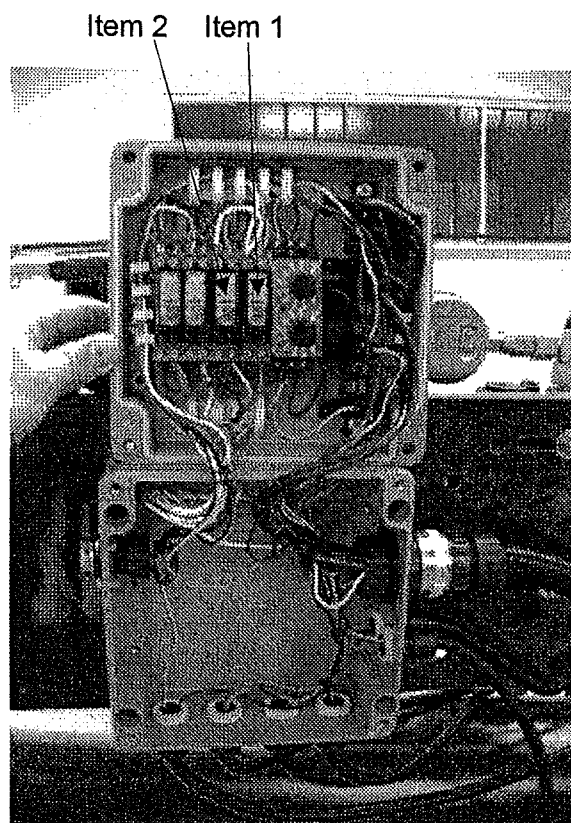
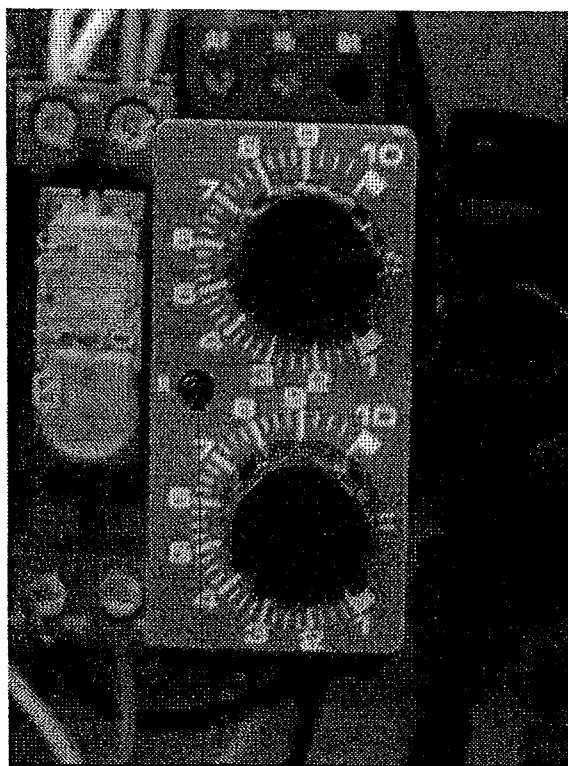


Fig 8.15



Light

Fig 8.16

8.27 HARVESTING

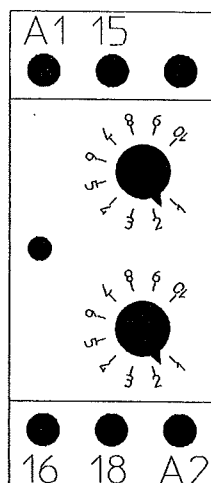


Fig 8.17

If proclean operation is still not correct, make sure the pressure switch is set to minimum so that the proclean keeps giving a reverse signal. Using a voltmeter, check that there is an input of 12 volts at point 15 on the timer relay with both timers set to their minimum (Fig 8.17) and that the red light is on.

Check for an output of 12 volts at point 18 (Fig 8.17).

If there is no output on the timer relay check and ensure that the earth connection at A2 is well made and that there is continuity.

Having carried out these checks and adjustments, if the timer relay is not giving an output, then it should be replaced.

Proclean angle actuator

The proclean is controlled for angle by an electric actuator. If this unit is not functioning, disconnect the connector close to the actuator and operate the switch in the drivers control box and ensure there is a 12 volt supply. If 12 volts are present then suspect the actuator has gone down.

If the unit is not working, and there is no supply then remove the cover from the electrical box mounted behind the proclean valve bank situated on the left hand side at the rear of the harvester. (Fig 8.14).

Inside the box mounted on the lid is a row of 4 relays, which are transparent. (Fig 8.15). Items 1 and 2 are relays for the controlling the up and down of the actuators.

Item 1 is for actuator up and item 2 is for actuator down. Check the output of the timer relays by operating the switch in the driver control box. By operating the switch the relays should be seen to be latching in place, if either does not then replace with new.

If no 12 volts, then back track through all the connections to the switch in the drivers control box and ensure all the connections are made correctly. If all connections are sound then with a voltmeter check the switch in the drivers

8.28 HARVESTING

control box is receiving a 12 volt supply and when switched, is giving a 12 volt output.

Agitator actuator (optional)

As an option the amount of agitation can be controlled from the drivers cab. This is achieved by two electric actuators, one on each side of the machine.

If one of these units is not functioning, disconnect the connector close to the actuator and operate the switch in the drivers control box and ensure there is a 12 volt supply. If 12 volts are present then suspect the actuator has gone down.

If both units are not working, again check for 12 volt supply, but if there is no supply then remove the cover from the electrical box mounted above the tractor valve bank situated on the right hand side of the harvester behind the guard panel. (Fig 8.9).

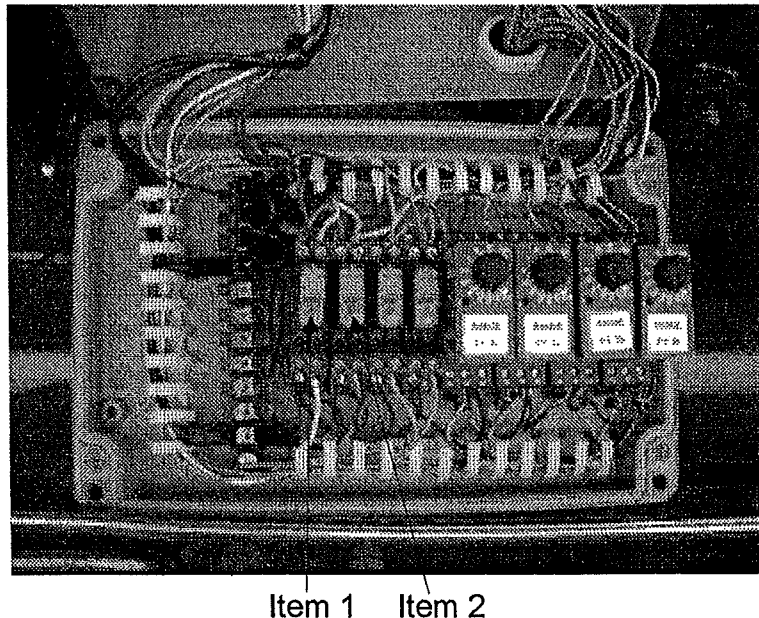


Fig 8.18

Inside the box mounted on the lid is a row of 4 relays, which are transparent. (Fig 8.18). Items 1 and 2 are relays for the controlling the up and down of the actuators.

Item 1 is for actuators up and item 2 is for actuators down. Check the output of the timer relays by operating the switch in the driver control box. By operating the switch the relays should be seen to be latching in place, if either does not then replace with new.

If the any of the above condition still exists then the fault may need the attention of a qualified Richard Pearsons Ltd engineer. Consult your authorised Richard Pearsons Ltd. dealer for further assistance.

9.1 – ROUTINE MAINTENANCE

New machines

It's important during the first weeks with a new machine to keep a regular check for any bolts, screws, connections etc. which may work loose during this initial working period. A few minutes spent each day can prevent costly and time consuming breakdowns.

Correct and adequate maintenance is vitally important to minimise the risk of breakdowns, reduce operating costs and obtain the maximum output from your harvester.

Lubrication

Regular lubrications is an integral part of looking after your harvester. The schedule of maintenance out lined below is a guide to when certain actions should be carried out. If your machine requires a more frequent lubrication schedule because of your workload, then it is poignant to reduce the time intervals between action.

Shafts, bearings and pivot points fitted with grease nipples should be greased with a good quality medium grease. Do not allow these points to run dry, as this will accelerate wear. A little more often, is a good policy to adapt rather than, a lot now and again.

When greasing bearings some are sealed and pre-lubricated. You should take care not to over grease this type as the seals may be damaged, only two strokes of the grease gun should be needed. If the seals become damaged it may be possible for dirt to enter the bearing causing accelerate wear. If the seals are damaged the more frequent grease will have to be carried out to prevent the bearing from failing.

The gearboxes, one on the front of the machine with the hydraulic pumps mounted on, the other being the proclean gearbox (if fitted), should be regularly visually examined for any signs of leaks and checked for oil level, and if necessary topped up. The pump gearbox uses BP EP HYPO ENERGEAR 85W/140, while the proclean gearbox uses BP-ENERSYN G.S.F.

PTO shafts should be inspected regularly (see section 2.1) and their shafts dismantled and the inner and outer shafts greased to ensure that the two sections slide smoothly.

Recommended Lubrication

RICHARD PEARSON Ltd. uses BP lubricants.

Please consult your local lubricant distributor, in order that a compatible equivalent may be recommended to you, should you choose to use the lubricants of a different manufacture. It is not a good policy to mix different types of lubricants.

9.2 – ROUTINE MAINTENANCE

Lubricants used

Medium grease	=	BP	Energrease L S E P 2
Clean oil	=	BP	NT 150
Gear oil	=	BP	EP HYPO ENERGEGAR 85W/140
		and	BP-ENERSYN G.S.F. (Proclean)
Hydraulic oil	=	BP	Bartrum HV46

Mechanical drives

All chain drives have adjusters that are visible when the appropriate guard is removed to expose them. Adjust the chains tight enough to give positive drive without undue stretching.

Where plastic chain tension or guide blocks are fitted, these will show fairly rapid wear initially, but will settle down when the chain rollers rather than the side plates come into contact with the plastic.

A suitable chain lubricant or a smear of grease should be regularly applied to the chains to prevent wear.

Electrical system maintenance.

The components within the electrical system are designed to be maintenance free. If it becomes necessary to carry out any repair, the work should be carried out by a competent engineer capable of this type of work.

Periodically ensure that all multi pin plugs are correctly fitted into their sockets are not becoming loose.

Hydraulic system maintenance.

Check hoses for chafing or damage and replace as necessary.

The components within the hydraulic circuit are designed, on the whole, to be maintenance free. If it becomes necessary to carry out any repair, such as replacing seals, the work should be carried out by a competent engineer capable of this type of work.

Ensure that the hydraulic residual pressure dump procedure is followed. (See section 8.12). Do not release any cylinder hoses without first carrying out this procedure.

Cleanliness in any hydraulic repair is of paramount importance. Before dismantling any part of the hydraulic system, ensure the surrounding area is clean. If necessary, power wash the area to be worked on. Dirt must be prevented from entering the system, so any orifices left open, such as pipe ends or ports of pumps or motors must be blanked off with a suitable plug. Do not use cloth or rag, as the lint from these can contaminate.

9.3 – ROUTINE MAINTENANCE

As the tractor is the oil supplier for the tractor side hydraulics. Ensure that the tractor hydraulic system is serviced in accordance with the manufacture's recommendations to prevent any contamination of the harvesters system.

Mounted on the front of the harvester in the supply line from the tractor is a pressure filter to protect the harvesters system. (Fig 9.1) The element inside the filter housing should be replaced after the first 50 hours of running time and then annually or 500 hours, which ever comes first. This filter unit has an indicator fitted to show the condition of the element. If this should go into the red area of the indicator this indicates that the element is blocked and needs replacement.

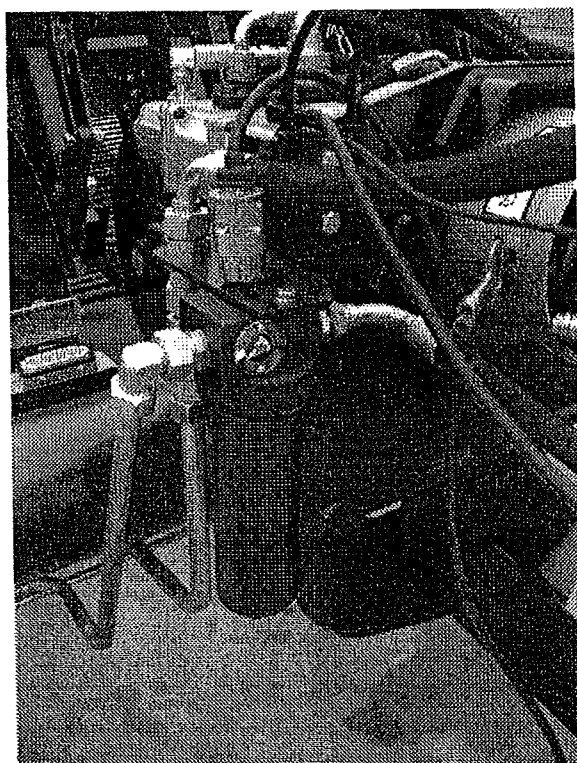


Fig 9.1

To extend the life of the hydraulic components it is important to monitor the condition of the hydraulic oil. Maintain adequate oil level in the hydraulic tank. Remember to only top the oil up when the oil is hot. Fill up with the correct grade of oil. (See section 9.1). If the oil becomes cloudy then water may have become mixed with the oil and it must be changed.

Inside the tank, at the outlet points, there are two suction strainers fitted. Annually these need to be removed, cleaned and refitted.

Mounted on top of the tank is a return filter. (Fig 9.2). The element inside the filter housing should be replaced after the first 50 hours of running time and then annually or 500 hours, which ever comes first.

9.4 – ROUTINE MAINTENANCE

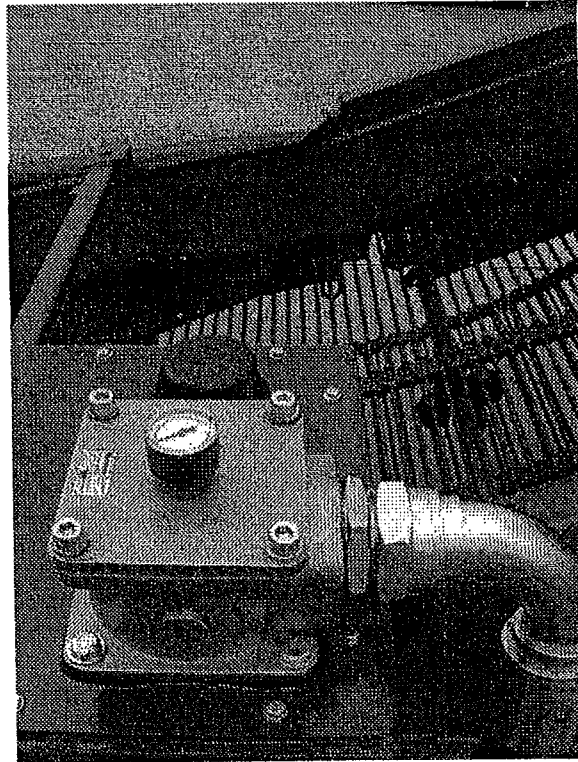


Fig 9.2

This filter unit has an indicator fitted to show the condition of the element. If this should go into the red area of the indicator this indicates that the element is blocked and needs replacement.

See section 8 for trouble shooting hydraulic areas of the machine.

Daily maintenance

During working season the following daily maintenance should be carried out. Check all covers and guards are in position, free from damage, and all retaining latches and hinges are in place and operative. Repair or replace any found to be defective before operating the machine.

Carry out the following check list:-

1. Check tension of all drive chains, adjust if necessary and lubricate with clean oil.
2. Check tyre pressures and adjust if necessary. For tyre pressures see section 3 Specifications.
3. Check for any damaged or broken rollers, web bars or stars etc. Repair or replace as necessary.
4. Check wheel nuts for tightness. For torque settings, see section 3 Specifications.

9.5 – ROUTINE MAINTENANCE

5. Check all scraper clearances and adjust as necessary. Scrapers should be adjusted as close as possible without actually touching.
6. Check all hydraulic cylinders, valves and pipe work for signs of leaks or damage, repair or replace as necessary. Check oil level in hydraulic reservoir.
7. Carry out lubrication

Weekly maintenance

During the working season the following weekly maintenance should be carried out.

1. Carry out all the procedures listed in daily maintenance.
2. Check all shafts, bearings and rollers for undue wear, and replace as necessary.
3. Check all bearings for lubrication, grease as necessary.
4. Check discs and shares blades for excessive wear, replace if necessary.
5. Check level of oil in front pump gearbox, if necessary top up with gear oil.

Annual maintenance

Prior to the start of the working season the following maintenance should be carried out.

1. Carry out all the procedures listed in daily and weekly maintenance.
2. Check all webs for any damage or wear and repair or replace as necessary.
3. Check stars and grip rings in Galaxy separator and replace any badly worn or damage parts.
4. Check metalwork (e.g. side plates) for any damage or wear and repair or replace as necessary.
5. Inspect wheel bearings and check for excessive wear, replace as necessary. Re-pack with fresh grease on re-assembly.
6. Replace the hydraulic filter element in the pressure line between tractor and machine valve bank. Use only genuine Richard Pearson Ltd replacement elements. **NB. THESE ARE NOT WASHABLE ELEMENTS.**

9.6 – ROUTINE MAINTENANCE

Out of season storage procedure

The harvester can frequently operate in soils which contain chemical fertilisers etc. When the working season is completed, wash and clean the machine thoroughly prior to carrying out the following checks and operations.

1. Apply oil, grease or an anti rust agent on any exposed bright metal surfaces which have been polished by the soil flow to prevent rust.
2. Clean all drive chains and lubricate with oil.
3. After carrying out the hydraulic residual pressure dump procedure (see section 8.12), any parts of hydraulic cylinders rods that are still exposed should be greased or oiled to prevent corrosion.
4. Ensure that the tyres are inflated to the correct pressure.
5. Ensure that the hydraulic hose quick release couplings and the electrical connectors on the machine are kept clean and dry.
6. Check the whole machine carefully and note any repairs that may need to be carried out. It is always better to carry out any repairs well before the commencement of the following season.
7. Carry out all the lubrication checks outlined in routine maintenance.
8. Ensure the driver's control box is kept in a safe, dry place and available for use at the commencement of work or for any maintenance to be carried out.
9. Ensure that this handbook is kept in a safe place and available for use at the commencement of work or for any maintenance to be carried out.

10.1 - OPTIONS

On the next few pages are shown the more popular options that can be fitted to the Enterprise harvester.

Clod roller option

There are a total of three different shaped clod rollers offered in the Starflow and Galaxy separators, round, square and hexagonal (Fig 10.1). Whichever one you had supplied with your machine, the others are available as options.

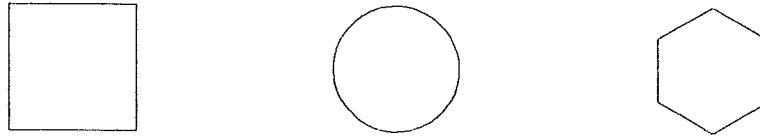


Fig 10.1

The shape of the clod roller affects the level of extraction of material. The round roller is the least aggressive; the hexagonal roller will extract more, while the square roller is the most aggressive. Consult your Richard Pearson dealer for more information.

Haulm roller and clod roller reversing kits

Kits are available to reverse the direction of haulm and clod rollers. This can be advantageous when harvesting very small potatoes or different crops such as carrots or onions.

Feed brushes

Additional brush assemblies are available to be mounted above the Proclean or Galaxy units.

Shaft speed monitor kit

A kit to enable the driver to know what R. P. M. star shafts are revolving at.

Proclean misting kit

A kit to enable water to be sprayed onto the proclean rollers for working in adverse, dry conditions.

Haulm ski's

A kit of parts mounted in front of the main web front rollers to deflect haulm under the front rollers.

10.2 - OPTIONS

Clod blocks

The clod block assembly is positioned above the main web and is there to help break down and help the sieving action of the soil through the web. The blocks are made from resilient rubber (Fig 10.2). Up to two units can be mounted above the web.

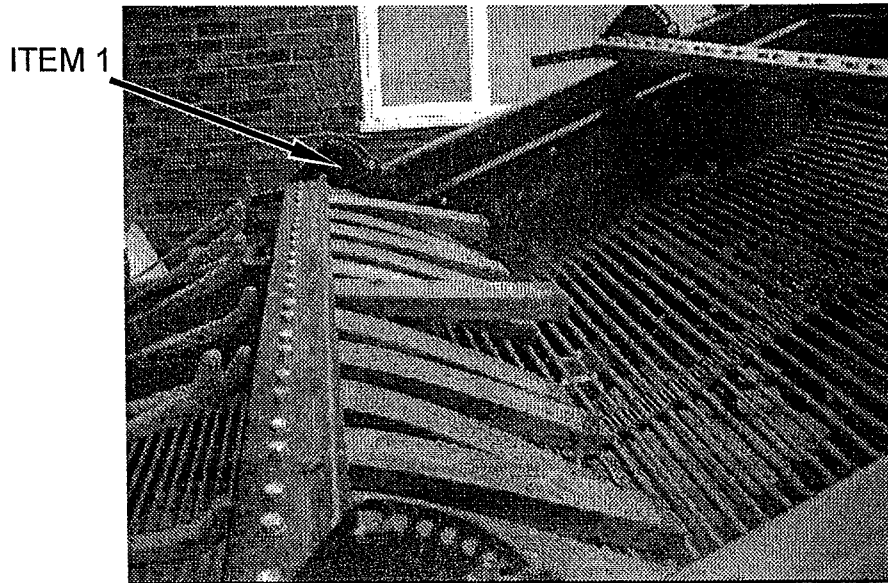


Fig 10.2

The angle of the blocks to the web is adjustable at item 1 Fig 10.2. By adjusting the angle more or less pressure can be exerted onto the soil. Care must be taken over how much pressure is put on as damage to the crop may occur.

Haulm intake wheels

In place of the standard anti-roll flaps a set of haulm feed in rollers can be fitted (Fig 10.3). These are for green or difficult haulm conditions and are mounted on top of the front edge of the main web, on the outside of the discs. The rollers fill the gap between the disc and the side panel and between the two centre discs, if fitted.

To fill the gap between discs and/or side panel, the width of the haulm intake wheels can be made up with additional rollers and spacers. These additional rollers and spacers are attached to the original rollers by suitable length bolts.

Further adjustments of the rollers width position can be made by moving them laterally on their mounting beam (Fig 10.4 item 1). Slacken clamp bolts, move the roller unit to the required position and tighten the clamping bolts again (Fig 10.4 item 3). Under certain conditions it may be advisable to exchange the left hand and right hand roller units in order to achieve the optimum settings.

10.3 - OPTIONS

If you experience problems with haulm rapping around front roller mountings the feeder wheel mountings are adjustable on their mounting bridge. They can be adjusted forwards and sideways to position them for optimum performance (Fig 10.4 item 2). If this problem is allow to continue it may cause haulm to build up and possibly affect the next row by dragging the crop out or, lifting the digging depth out, causing damage to the crop.

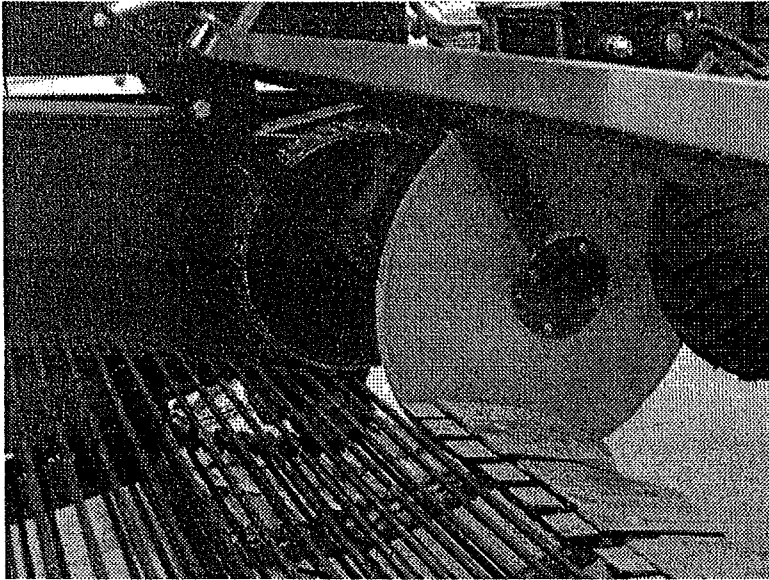


Fig 10.3

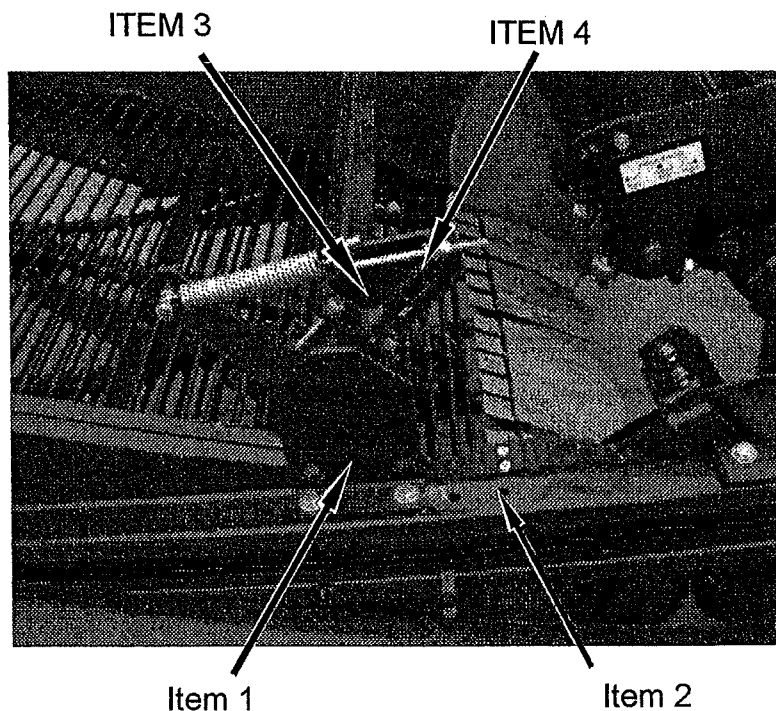


Fig 10.4

The tension of the haulm feed in rollers may be adjusted, to give more or less pressure between rollers and web. This is achieved by increasing or decreasing the spring tension between the roller mounting arm and the spring anchor. The tension should be sufficient to allow the rollers to grip the haulm and to achieve a positive drive from the web (Fig 10.4 item 3).

10.4 - OPTIONS

Agitator electric pitch adjustment

An electric actuator is mounted to the agitator control arm (fig 10.5) and is operated by a switch in the drivers switch control box (see section 4). This gives the driver remote operation of the amount of agitation on the main web.

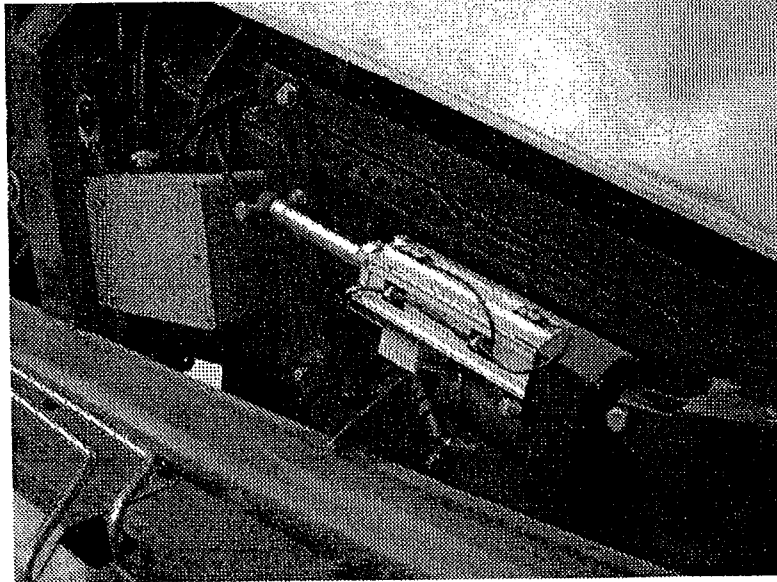


Fig 10.5

Oscillator

A hydraulic driven oscillator may be mounted above the main web in order to spread any bunches of haulm or weed. It consists of two rows of rubber covered fingers which are adjustable for height above the main web (Fig 10.6 guard shown removed).

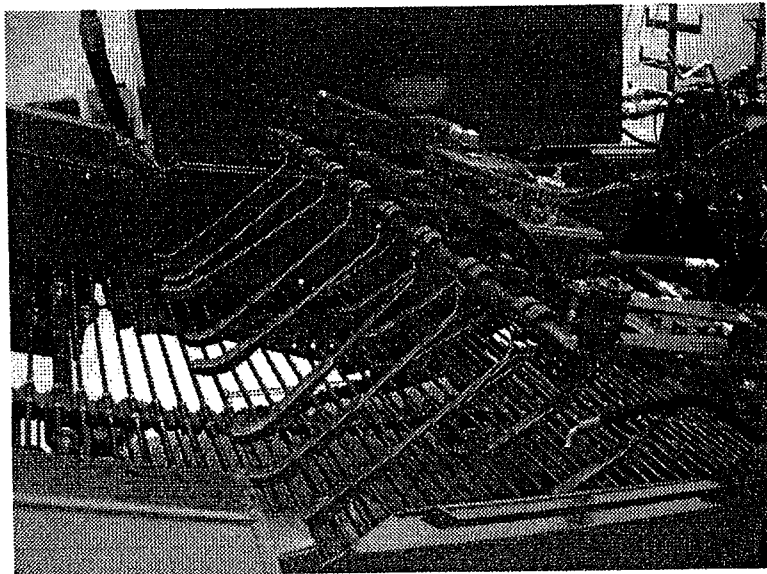


Fig10.6

These should be set so that the haulm is evenly distributed, but the flow along the web is not impeded. A switch is mounted in the driver's control box, which

10.5 - OPTIONS

controls the on/off of the oscillator unit. The speed of movement of the oscillator is normally manually controlled by a valve on the tractor valve bank situated on the right hand side of the machine item 1 Fig 10.7 this valve can be made remote operated from the drivers control box (see section 4).

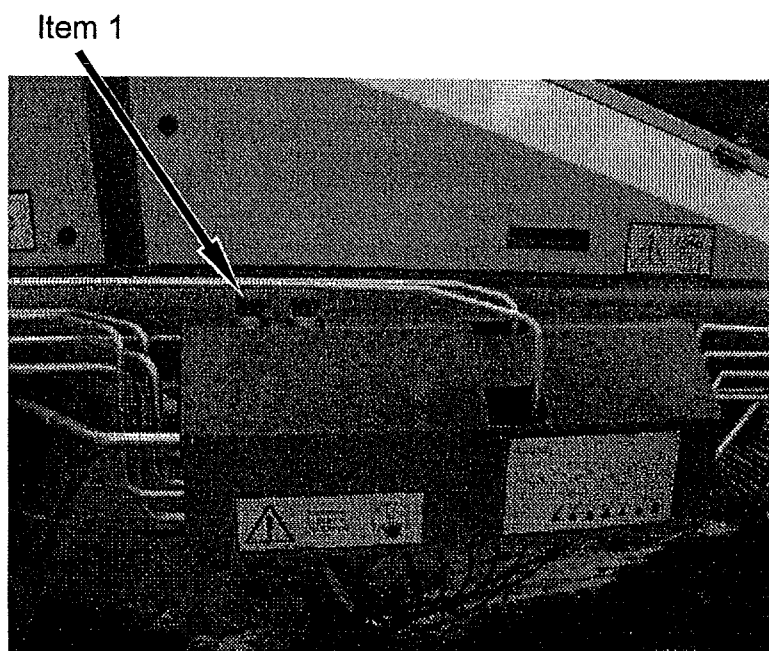


Fig 10.7

Drive chain can be adjusted by removing guard and adjusting nylon chain tension roller item 1 Fig 10.8.

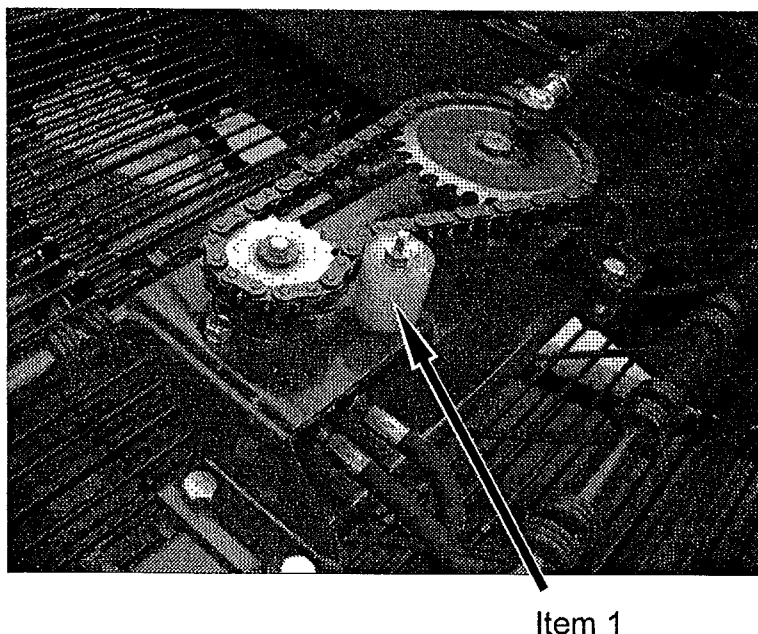


Fig 10.8

10.6 - OPTIONS

Diablo

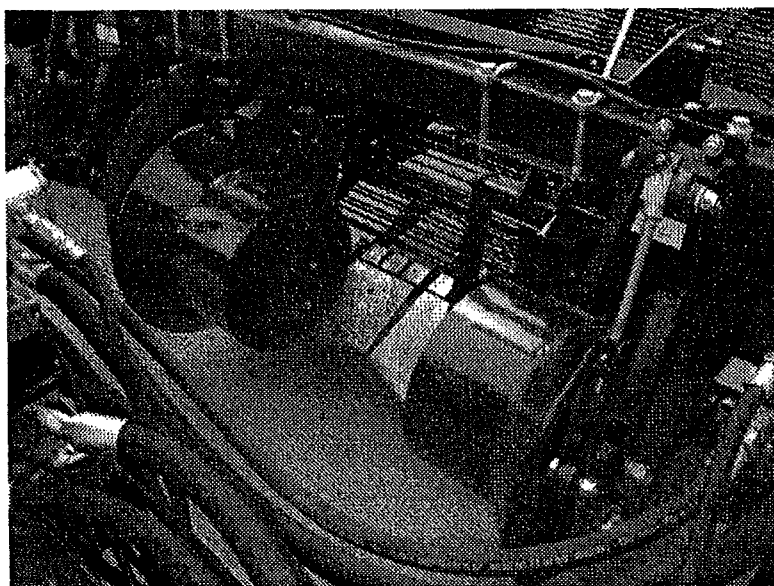


Fig 10.9

As well as the standard depth wheels a variety of shaped steel diablo's can be fitted to run on top of the row to operate the depth control system. Shapes available are; full diablo, half-diablo or plain (flat) diablo. Fig 10.9 shows an enterprise fitted with a pair of half diablo's.

Automatic proclean levelling

The proclean unit can be controlled, for angle, automatically by the addition of a small electrical box mounted on the proclean unit. This gives the driver the choice of switching the angle control between manual to automatic. The electrical box is manually adjusted on its mounting bolts to give the required proclean working angle and then switched on and off via the driver's control box. In the automatic position the proclean will stay at the set angle to the true horizon as the machine travels over undulating ground.

Automatic axle levelling

It is possible to have the axle levelling cylinder controlled by an optional electronic device, which will give automatic lateral levelling control. The unit is mounted onto a plate at the rear, right hand side of the chassis bridge. The unit can be adjusted for angle to give the required attitude of the machine. Once the unit is switched on, it will maintain that attitude automatically irrespective of the contours of the land. When the unit is fitted a switch in the driver's control box will switch the unit on and off. (see section 4). When the switch is off there is normal manual control of the level leg, when the switch is on full auto control is engaged.

10.7 - OPTIONS

Duel levelling

An option for a second level leg ram on the left hand side of the machine.

Tyres

Alternative tyre sizes are:

Size	pressure (bar/psi)
16.9 R 24	1.6/23
440/65 R 24	1.5/21
500/45 x 22.5	1.4/20
550/45 x 22.5	1.4/20
600/50 x 22.5	1.0/15

Other tyre sizes may be fitted other than those shown, but dimensions must be checked to ensure that there is adequate clearances to axle, elevator and other associated parts. Consult your authorised Richard Pearson Ltd. dealer.

Main web pitch options

A variety of alternative main web pitches are available to suit different working condition and a variety of crops. The most popular main web pitches are 50 mm, 45 mm, 40 mm, 35 mm and 28 mm.

Stars

Both the Starflow and Galaxy separating modules are fitted with 14 finger stars as standard. As an option when working with small crops it is possible to fit into these modules an 18 finger star. When fitted into the modules they have a smaller gap radially, between the fingers and axially between the stars.

10.8 - OPTIONS

Main web cleaner

A set of resilient rubber blocks mounted inside the main web, acting on the web bars to help remove soil and fibrous materials. (Fig 10.10)

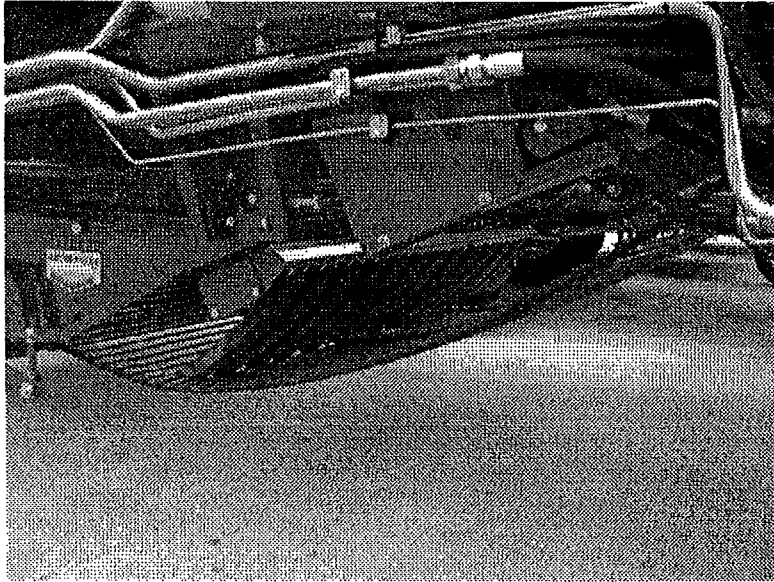


Fig 10.10

The pressure exerted onto the web bar is adjustable by rotating the cleaner assembly to give more or less contact. Item 1 Fig 10.11.

Item 1

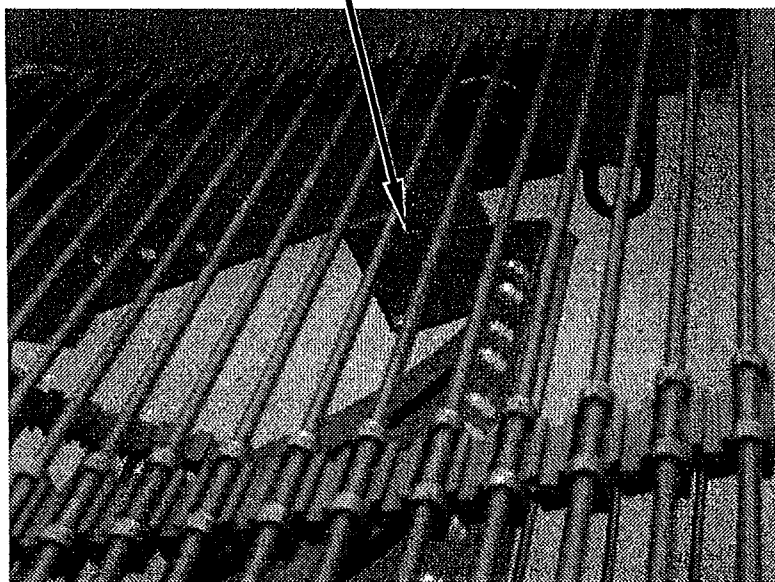


Fig 10.11

10.9 - OPTIONS

Vari-web

The vari-web unit consists of a wide pitch web with rubber flights (Fig 10.12 item 1) mounted above the main web (Fig 10.12 item 2). It is driven hydraulically, and used to assist in the transport of the crop up the main web when working in hilly conditions.

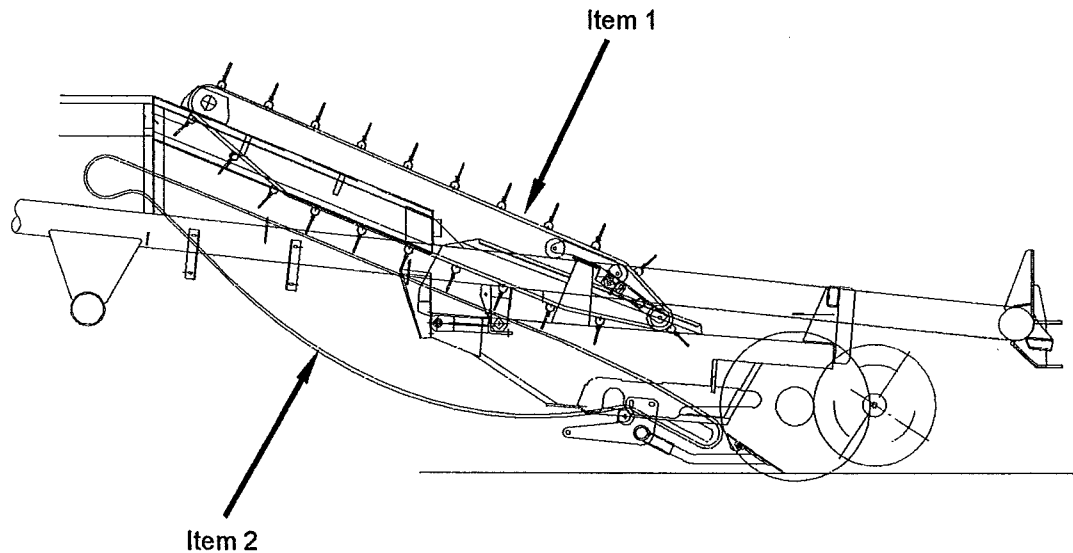


Fig 10.12

The speed of the vari-web is normally manually controlled by a valve on the tractor valve bank situated on the right hand side of the machine item 1 Fig 10.13, but can be made remote controlled from the drivers control box.

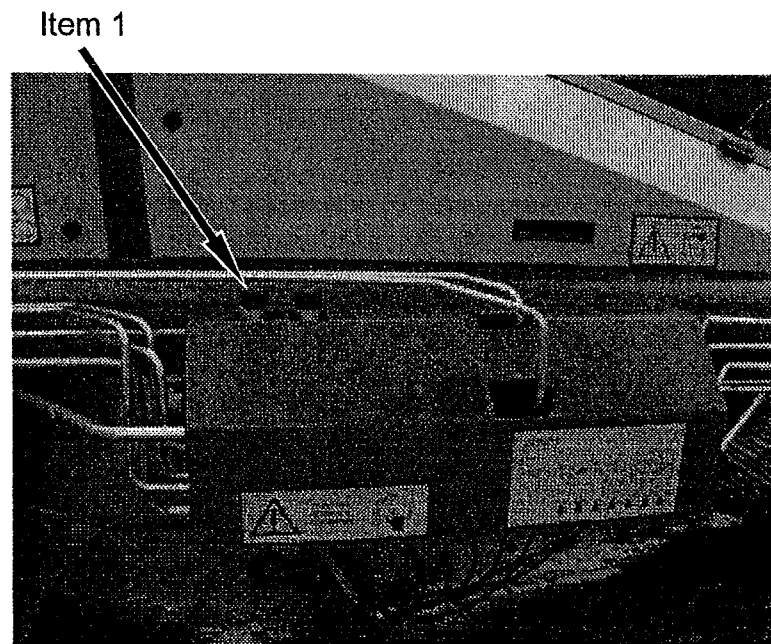


Fig 10.13

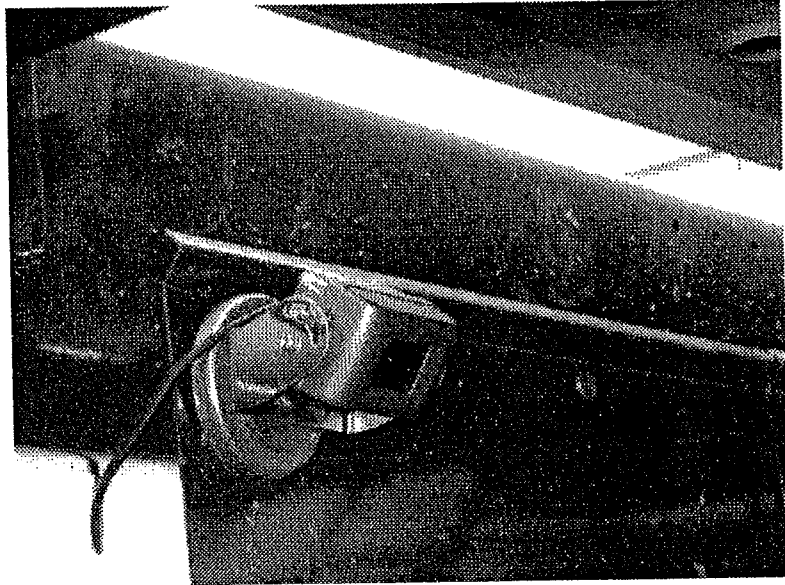
10.10 - OPTIONS

Pearson vision Technique camera system

A closed circuit television camera and monitor is available to enable constant monitoring of the crop flow through the machine. Contact your officially appointed Richard Pearson Ltd dealer for further information about this valuable aid to your machine operation.

Fig 10.14 shows the camera mag-mounted on the side of the starflow unit, while Fig 10.15 item 1 shows a typical mounting of the monitor inside a tractor cab.

Fig 10.14



Item 1

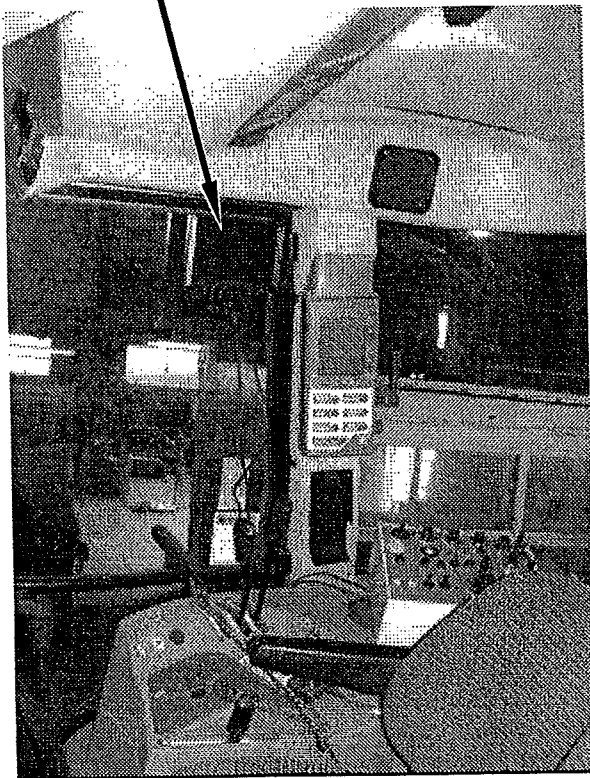


Fig 10.15

10.11 - OPTIONS

Crop types

Your harvester can lift a variety of alternative crops. Consult your Richard Pearson dealer for further information.

Figures 10.16 and 10.17 show an example, with the front of an enterprise set up for onions. Shown is an eight piece share blade arrangement (fig 10.16 item 1) and a baffle for holding the crop in at the row ends (fig 10.16 item 2). The hydraulic ram for lifting and lowering the baffle is plugged into the tractors auxiliary spool valve. Consult your tractor handbook, or tractor dealer for further information.

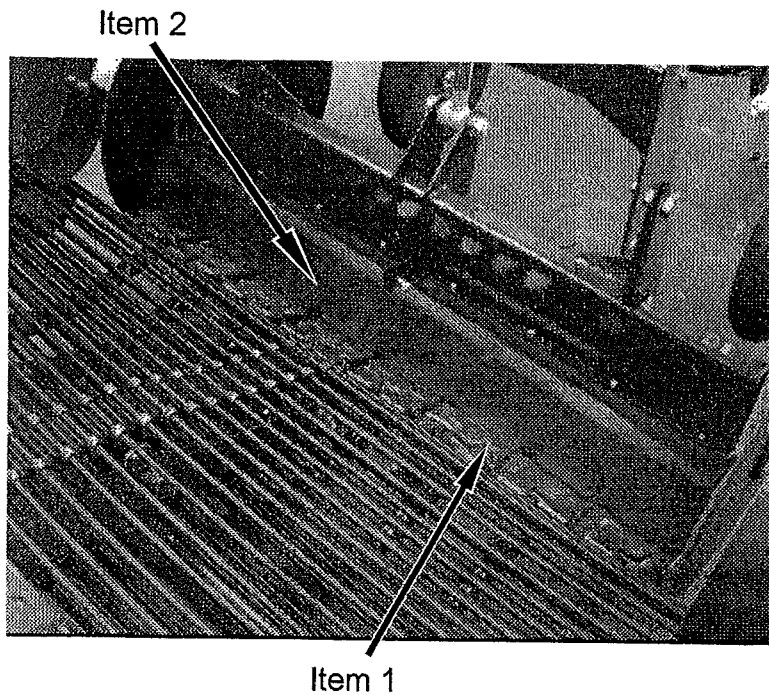


Fig 10.16

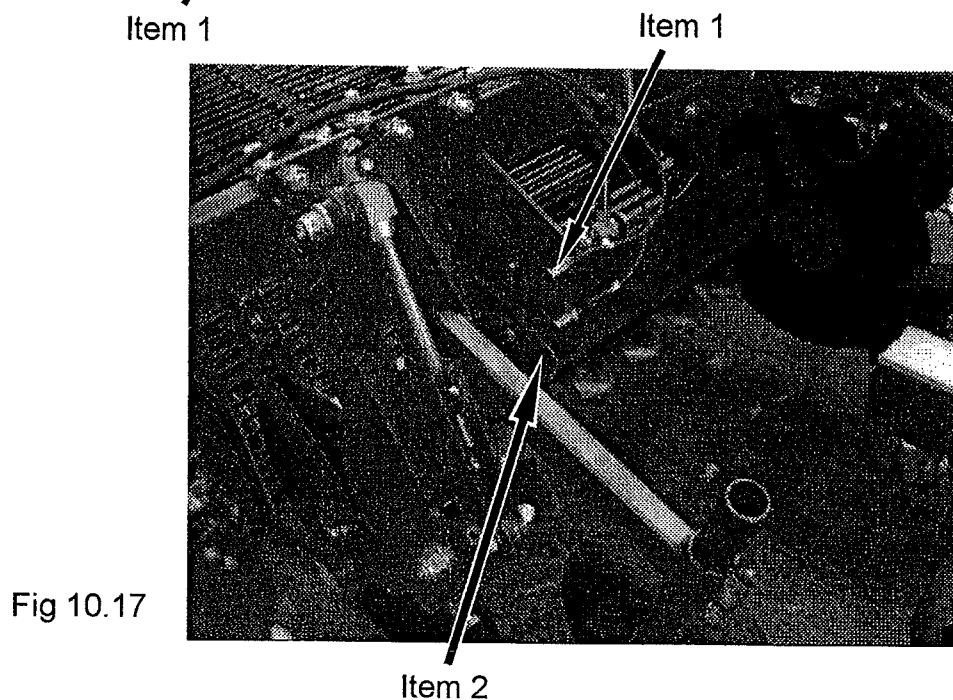


Fig 10.17

In Fig 10.17 it shows the depth wheel arrangement for this attachment. Adjustments and set up is the same as for the standard depth explained in page 8.19.

10.12 - OPTIONS

To help with a variety of crops there are additional attachments that can be mounted on to the intake area of the machine to aid harvesting. Two examples of these are; smaller diameter discs and concave disc to be mounted in front of the main discs to aid the removal of straw when lifting carrots

Easi-pick table

A small picking off belt, (Fig 10.18), capable of carrying 2 pickers. Comprising of a belt from which the pickers sort through the crop, and a chute which returns the crop to the cart elevator. The unit is hydraulically driven and can be controlled for speed by a flow control valve. A small electrical control box gives emergency stop facility, communication to the driver and speed control (see section 4 for explanation of these controls). The box has a magnetic foot and can be mounted in a convenient position to the pickers.

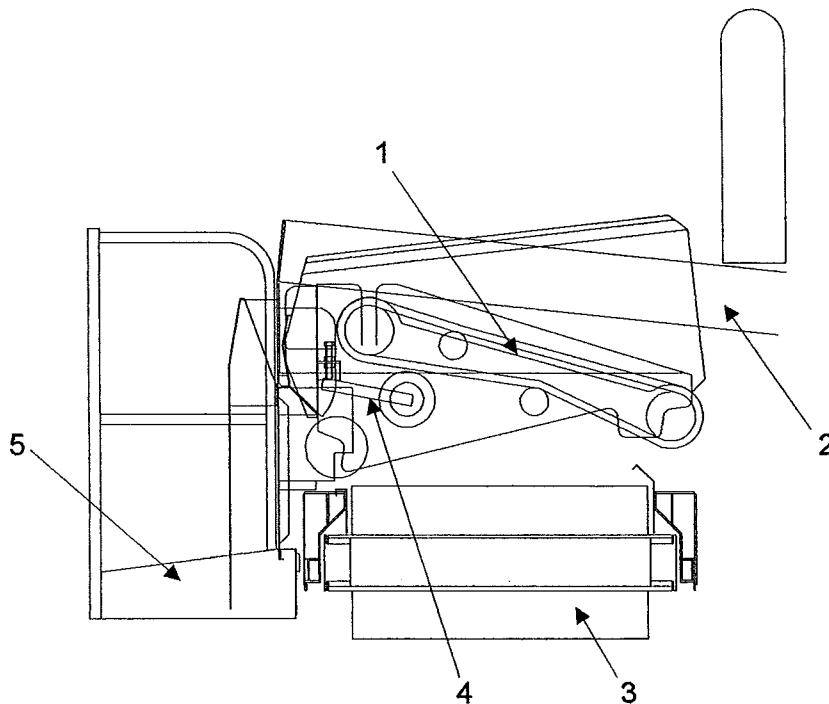


Fig 10.18

1. POB web.
2. Main chassis.
3. Cart elevator.
4. POB web tension adjuster.
5. Platform.

POB web tension

Adjustment of the picking off web is by the web adjusters on each side of the table (item 4 Fig 10.18). Ensure that the webs are tensioned evenly on both sides of the table so that the webs run correctly.

10.13 - OPTIONS

POB Drive chain tension

The tension of drive chain can be adjusted on the left-hand side of the table. By removing the guard, the drive chain is exposed. The idler sprocket is mounted in a slot and can be adjusted by slackening the clamp bolt.

In-line table

A picking off belt, (Fig 10.19), capable of carrying 4 pickers. Comprising of a top belt from which the pickers sort through the crop, and a lower belt which returns the crop to the cart elevator. The unit is hydraulically driven and can be controlled for speed by a flow control valve. A small electrical control box gives emergency stop facility, communication to the driver and speed control (see section 4. for explanation of these controls). The box has a magnetic foot and can be mounted in a convenient position to the pickers.

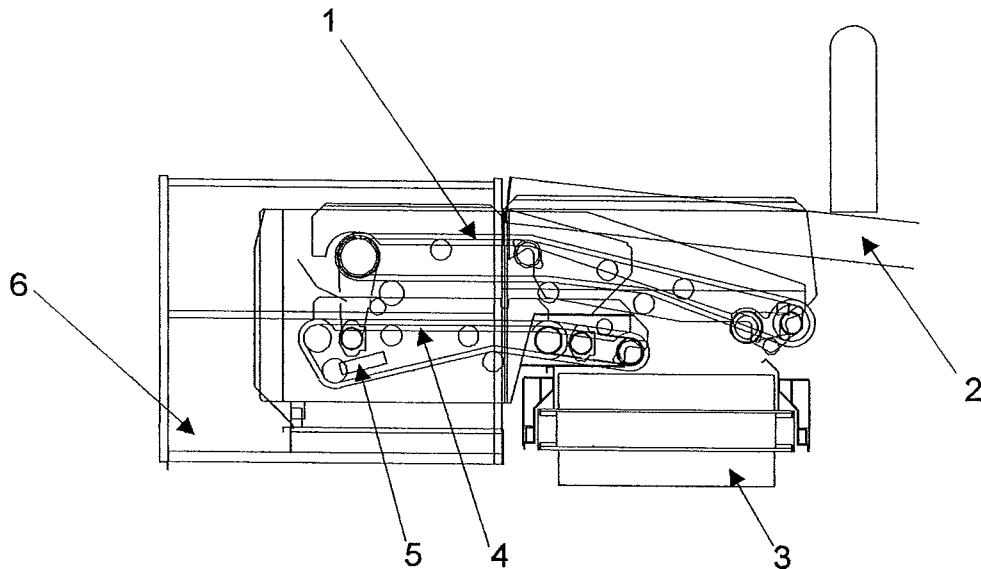


Fig 10.19

1. POB picking web.
2. Main chassis.
3. Cart elevator web.
4. POB return web.
5. POB web tension adjuster.
6. Platform.

POB web tension

Adjustment of the top picking off web is by adjusting the rear rollers of the web, and for the return web by the web adjusters on each side of the table (item 4 Fig 10.19). By removing the guards, web adjusters on each side of the table can be reached. Ensure that the webs are tensioned evenly on both sides of the table so that the webs run correctly.

10.14 - OPTIONS

POB Drive chain tension

The tension of the picking off table drive chain can be adjusted on the left-hand side of the table. By removing the guard the drive chain is exposed. The lower idler sprocket is mounted in a slot and can be adjusted by slackening the clamp bolt.

Elevator lowering kit

A bracket added to the elevator main section hydraulic ram mountings (Fig 10.20 item 1). This enables the main section to travel out to a lower angle, which in turn allows the swan neck section to reach lower into the trailer or box being filled.

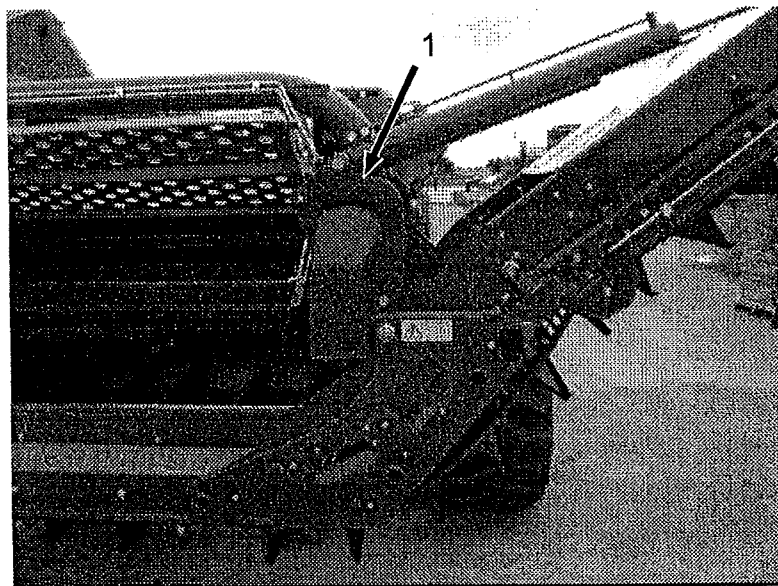


Fig 10.20

Elevator windrow kit

A kit comprising web extension, deflector and valve to enable the direction of the cart elevator web to be reversed so that a windrow of crop can be placed to the left hand side of the machine between the next two rows to be lifted. Can be used when waiting for, or changing over trailers so that continuous harvesting can take place.

Elevator box filling chute

A rubber construction that attaches to the discharge end of the elevator that acts as a fall breaker for the crop as boxes are filled.

11.1 – WHEEL MOTORS

Wheel motors

The enterprise can be fitted with a power driven rear axle. This consists of a hydraulic pump and control valve arrangement (Fig 11.1) with motors fitted inside the harvester's wheels. (Fig 11.2).

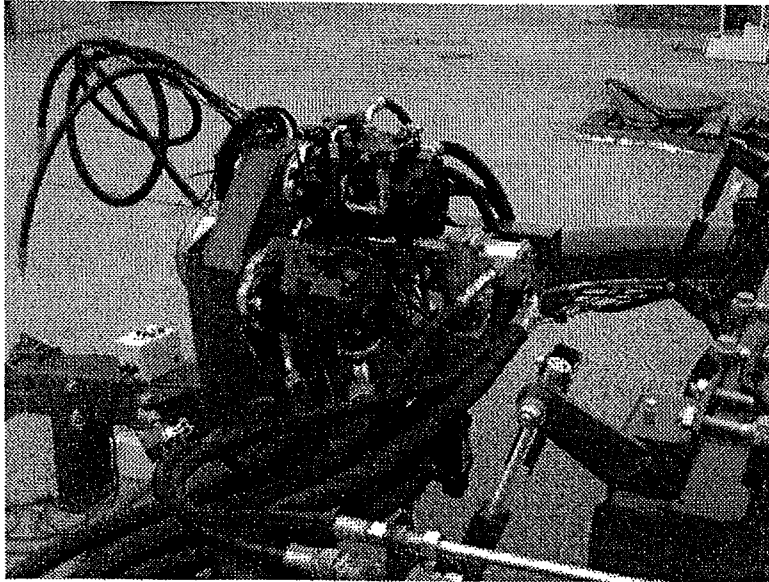


Fig 11.1

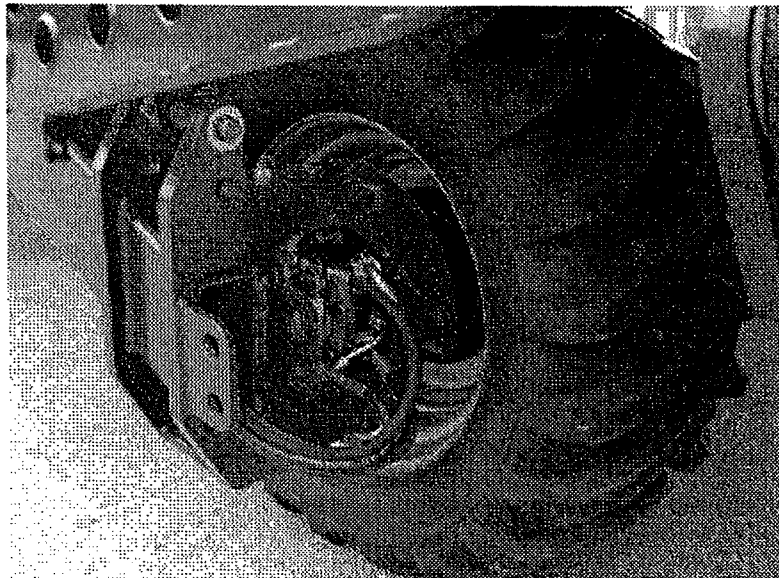


Fig 11.2

The driver has control of this system from an additional control box in the driver's cab. (Fig 11.3 item 1). With this control the driver can switch the drive on and off, select forward or reverse or choose high or low power. There is also an emergency stop button that disables the drive. There is an added safety feature where the electrical control of the wheel drive is coupled through the braking system of the tractor. If the tractor brakes are applied, then the drive system is disengaged and has to be reset to be operated again.

11.2 – WHEEL MOTORS

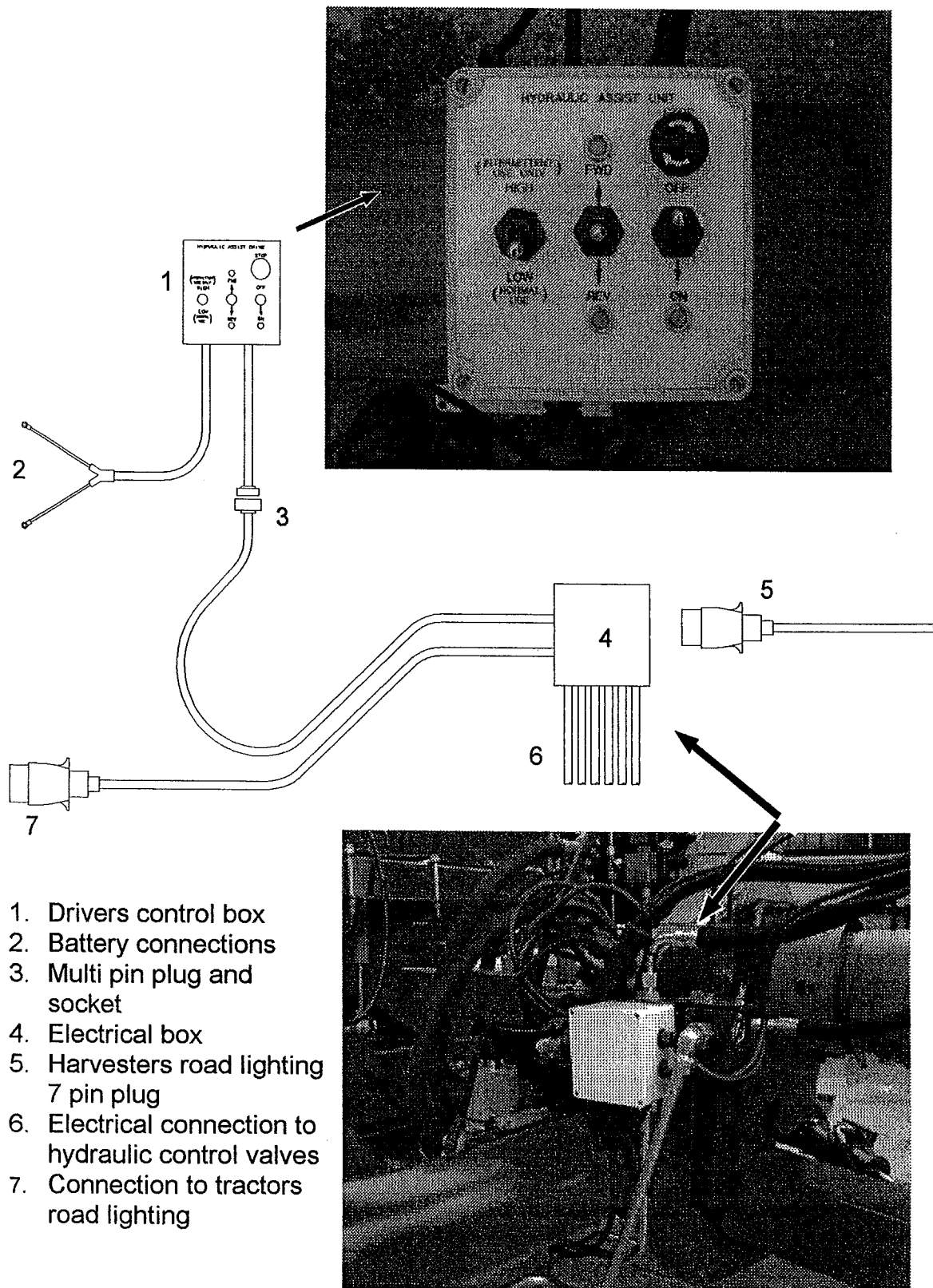


Fig 11.3

11.3 – WHEEL MOTORS

Electrical connections

DO NOT use existing electrical sockets on the tractor, as these will prove inadequate. Use only the connections provided with your machine.

NOTE: ONLY TRACTORS WITH NEGATIVE EARTH ELECTRICAL SYSTEMS MUST BE USED. CONSULT THE TRACTOR MANUFACTURER'S HANDBOOK FOR THIS INFORMATION.

The machine is supplied with a power supply lead with eyelets for connecting to the tractor supply (Fig 11.3 item 2). The lead should be connected, via a suitable route on the tractor, to either the starter solenoid or the main battery. The red wire should be connected to the positive terminal on the starter solenoid or the main battery. The black wire should be connected to either the battery negative terminal, or to a suitable earth point on the tractor.

Mounted on the base of the driver's control box, on a plate, is a strong magnetic foot, which allows it to be mounted to any convenient metal plate in the tractor cab.

Between the driver control box in the tractor cab and the machine is an electrical cable with a multi pin connector (Fig 11.3 item 3). This is connected to an electrical cable that comes emanates from the electrical box mounted on the front of the harvester (Fig 11.3 item 4).

From the electrical box mounted on the front of the harvester (Fig 11.3 item 4) there is an electrical cable that ends in a standard, seven-pin trailer lighting plug (Fig 11.3 item 7). **THIS MUST BE FITTED INTO THE TRACTOR'S LIGHTING SOCKET. IT IS IMPORTANT THAT THIS IS FITTED TO COMPLETE THE SAFETY CIRCUIT AND THE ROAD LIGHTING CIRCUIT.** On the electrical box mounted on the front of the harvester (Fig 11.3 item 4) there is an electrical socket for the harvesters seven pin trailer lighting plug (Fig 11.3 item 5) to be plugged into.

DO NOT apply excessive force to the plug connectors when connecting into the sockets otherwise damage may be caused.

If additional electrical equipment (working lights, camera kits, etc) are fitted to the machine, they must not be connected to the wheel motor wiring loom.

When the machine is being towed along public roads, the red on/off power button, on the control box, must be in the off position to avoid any risk of the control switches being accidentally activated.

11.4 – WHEEL MOTORS

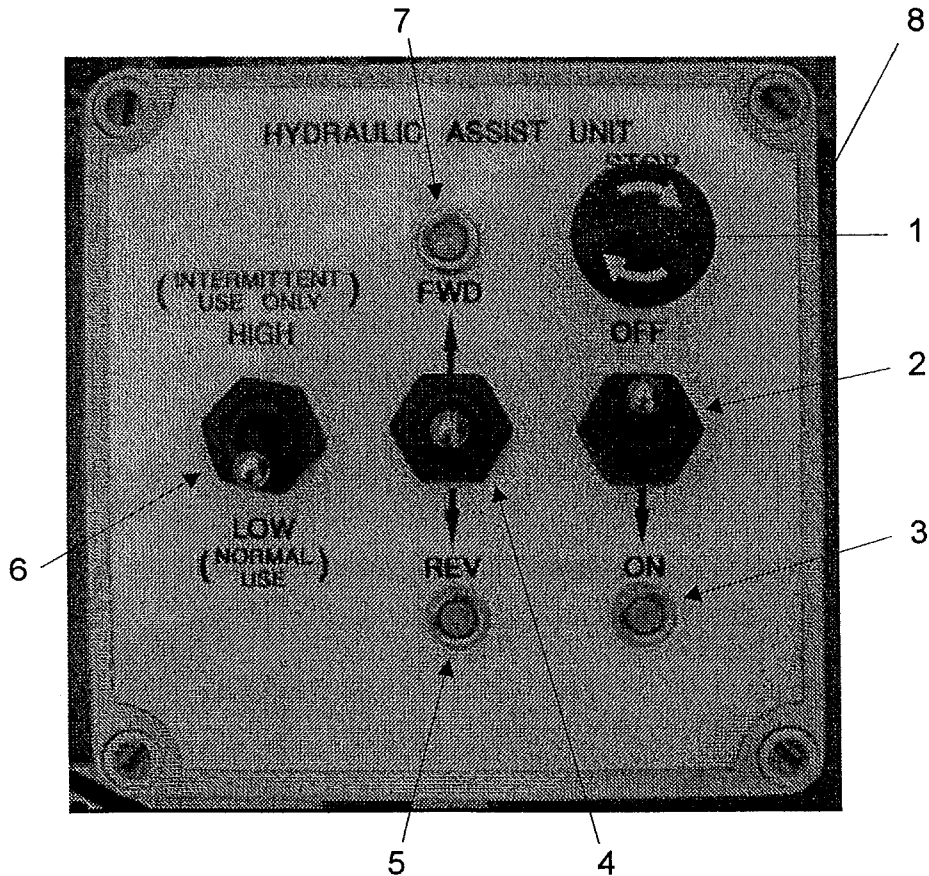


Fig 11.4

Controls (Fig 11.4)

1. ELECTRICAL 'E' STOP BUTTON

This button is the emergency on/off control for the electrical supply to the control box and is operated by twisting to turn ON and pushing down to turn OFF.

When OFF, all electrical power to the wheel motor electrical circuit is turned off.

In an Emergency, when in drive, hitting this stop button will disengage all drive function and put the axle into free wheel.

2. ON / OFF SWITCH

This switch is a two position toggle switch, which switches the power on to the control valves.

With the controls switched OFF the powered axle will free wheel

11.5 – WHEEL MOTORS

3. ON INDICATOR LIGHT

Illuminates when power switch is in the ON position.

4. FORWARD – NEUTRAL – REVERSE SWITCH

This switch is a three position toggle switch, which selects forward, neutral or reverse. Used to reset the safety circuit after the tractor brakes have been applied.

5. REVERSE INDICATOR LIGHT

Illuminates when switch 4 is in the reverse position

6. HIGH / LOW POWER SWITCH

This switch is a two position toggle switch, which selects high or low power at the wheels. The switch is latched in the low power position, and can be held in the high power position. It is advised to only use the high power setting for short periods at a time.

7. FORWARD INDICATOR LIGHT

Illuminates when switch 4 is in the forward position.

8. SAFETY CUT OUT SWITCH

Mounted on the side of the control box is a safety cut out switch, which protects the control box from over voltage. If volts rise above the correct level then the switch will pop out. By switching the power off this safety switch can be reset by pushing in until it latches in place. If the safety switch keeps cutting out then there is a problem in the electrical circuit that must be attended to.

Operation

When switch 2, Fig11.4 is in the OFF position the system is in free wheel and can be towed along the field or roads. This switch should be in the off position when travelling along the road to ensure the system is in the free wheel mode and that the forward, reverse can not be accidentally selected.

When switch 2, Fig11.4 is in the ON position the system control valves have power and are ready for the selection of forward or reverse.

To select forward or reverse move switch 4, Fig 11.4 to the desired position. This will select the required direction and the harvester will match the speed of the tractor.

The drive circuit is normally in low power and this will be use when harvesting. If a particularly heavy patch is encountered while harvesting or manoeuvring difficulties are encountered, then high power can be selected. It is advised to

11.6 – WHEEL MOTORS

only use the high power setting for short periods. This will prevent the oil from over heating.

Added safety feature, if the driver applies the tractor brakes, then the wheel motor circuit is disengaged and has to be reset, to be put back into drive mode. This is done by operating switch 4, (Fig 11.4) to the neutral position and then reselecting drive.

