MEGASTAR
2000

Standen Engineering Limited.
Hereward Works,
Station Road, Ely,
Cambridgeshire.
CB7 4BP
England.

Tel: 01353 661111 www.standen.co.uk Fax: 01353 662370

RICHARD PEARSON

MEGASTAR

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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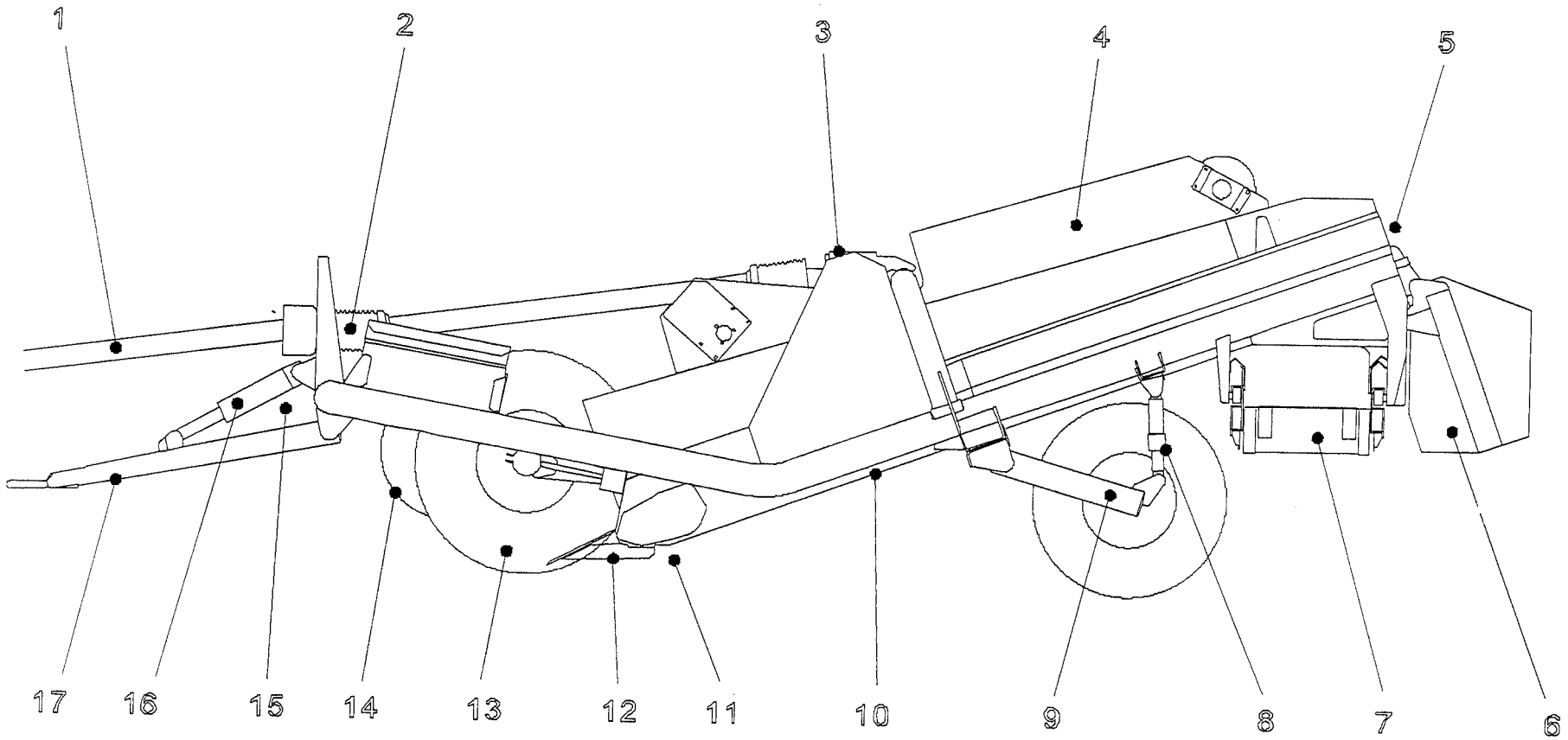

1. PTO
2. SLIP CLUTCH
3. GEARBOX
4. VARIWEB
5. BOULDER BOX STARS
6. BOULDER BOX
7. CROSS CONVEYOR
8. LEVEL LEG
9. AXLE
10. STAR BED
11. FRONT STEEL ROLLER
12. SHARES
13. DISCS
14. DIABOLO
15. TRANSPORT LOCK VALVE
16. LIFT RAM
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1.1 INTRODUCTION

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 operational 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, otherwise any warranty may be invalidated.

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.....

.....

.....

.....

.....

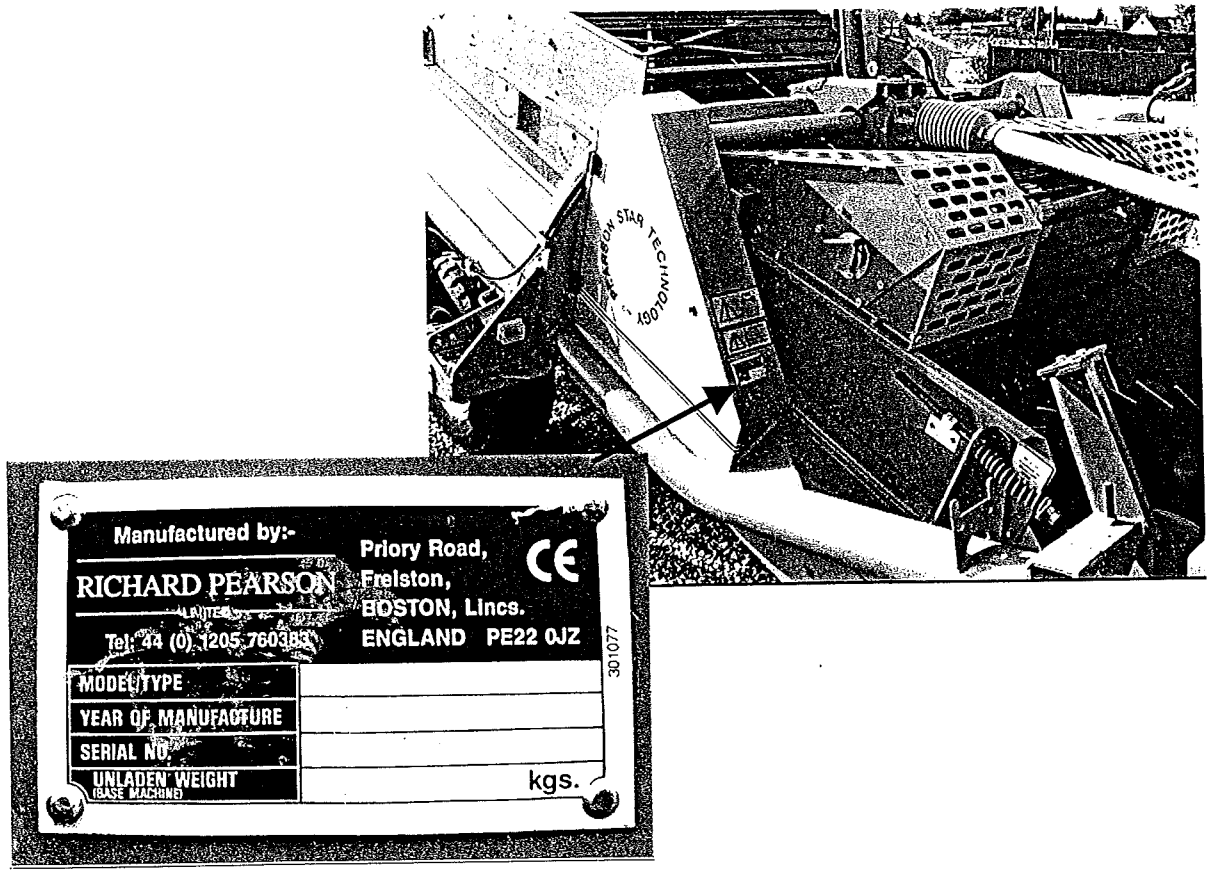


Fig 1.1

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 correctly, 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.

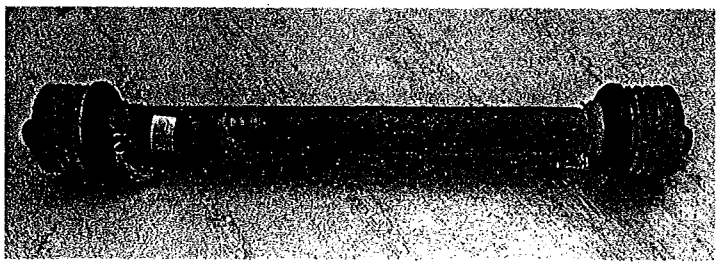


Fig 2.1

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, respiratory 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's, 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.

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.

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 8.4. 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.

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.

2.4 - HEALTH AND SAFETY

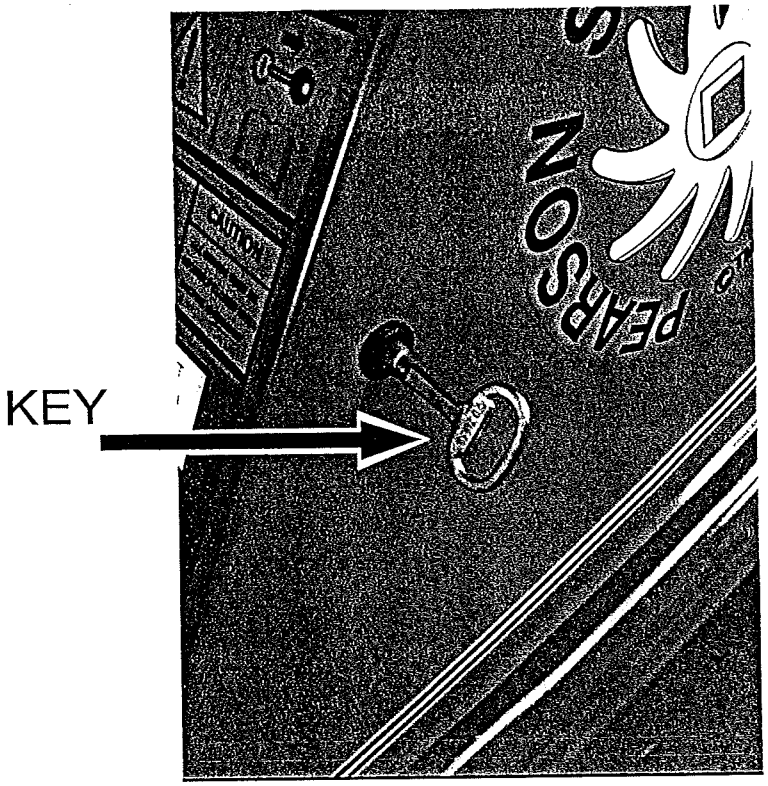
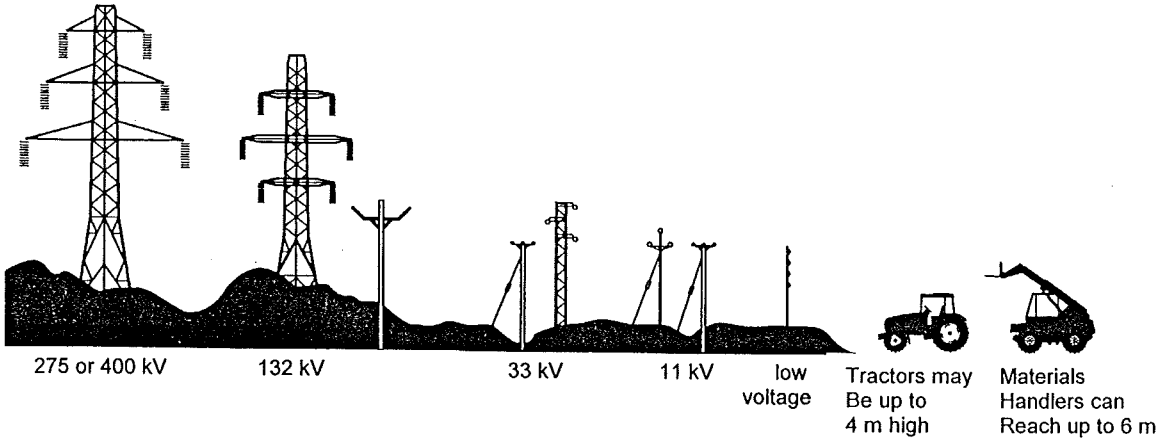


Fig 2.2

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

2.5 - HEALTH AND SAFETY



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.

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.

2.6 - HEALTH AND SAFETY

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

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.

2.7 - HEALTH AND SAFETY

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. If hydraulic levelling is fitted, lower the levelling cylinders to their minimum position. Fig 2.3

B. Fit the diabolo transport lock to stop the diabolo bouncing on its resilient mountings. Fig 2.4

C. Operate the drawbar hydraulic cylinder and fully raise the machine, then close the transport lock valve. Fig 2.5

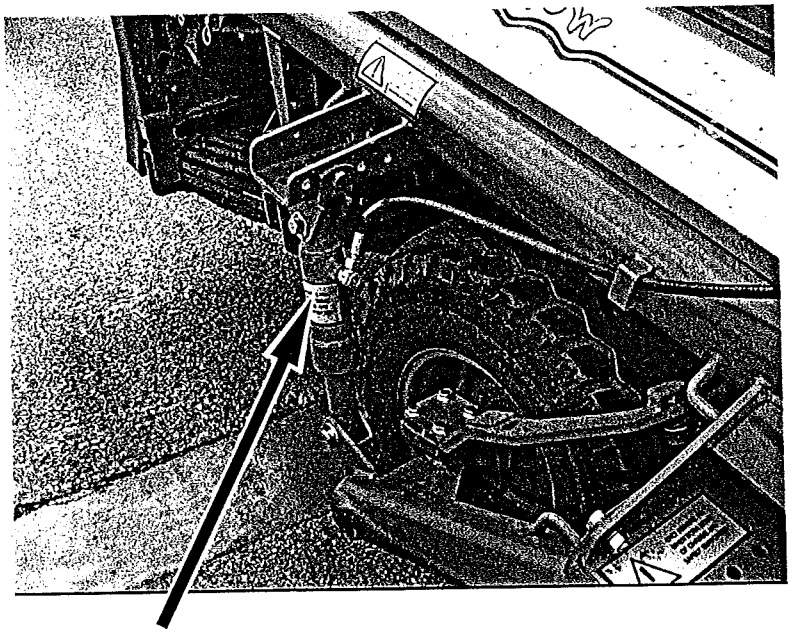
D. Make sure the cross conveyor is fully folded and locked in its transport position. See section 7.7 and Fig 2.8

E. Make sure the steering is in the straight ahead position.

F. Switch off the power to the drivers control box to avoid inadvertently operating any of the machines controls whilst transporting.

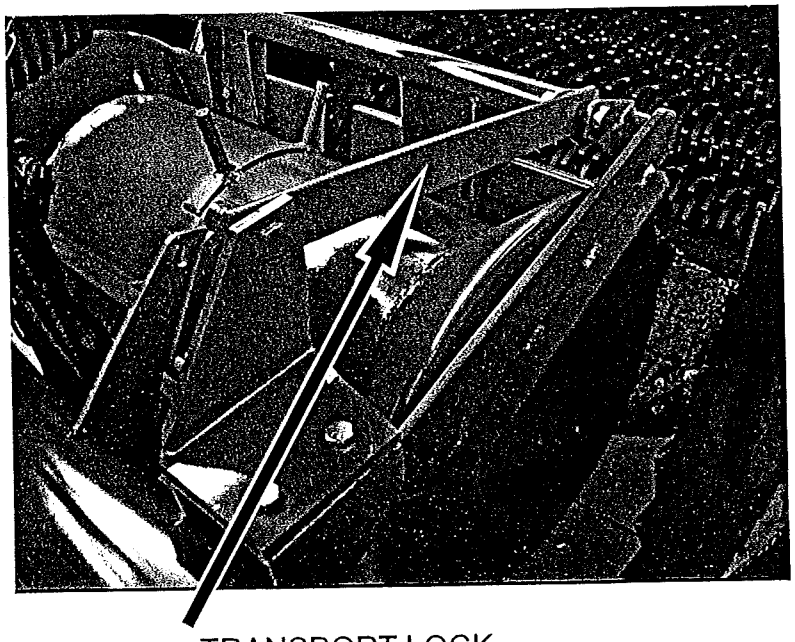
G. Ensure road lights are clean and in good working order.

H. Slinging points are provided on each side of the chassis to allow the machine to be secured for transport whilst on a trailer.



LEVELLING CYLINDER

Fig 2.3



TRANSPORT LOCK

Fig 2.4

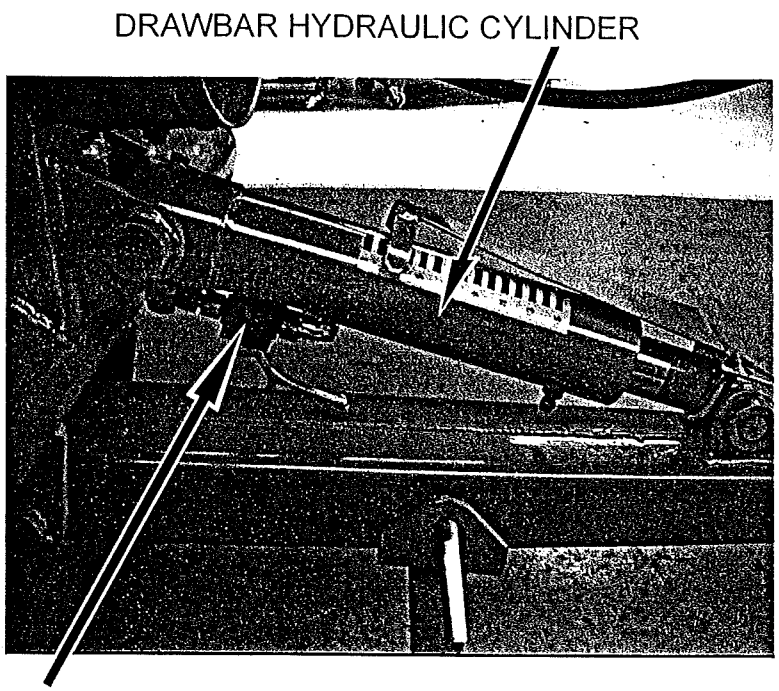

DRAWBAR HYDRAULIC CYLINDER
TRANSPORT LOCK VALVE

Fig 2.5

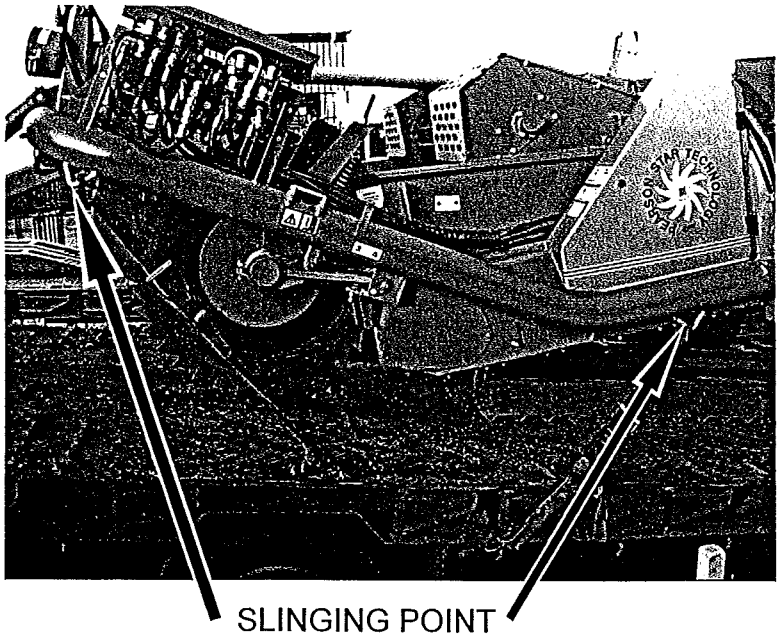

SLINGING POINT

Fig 2.6

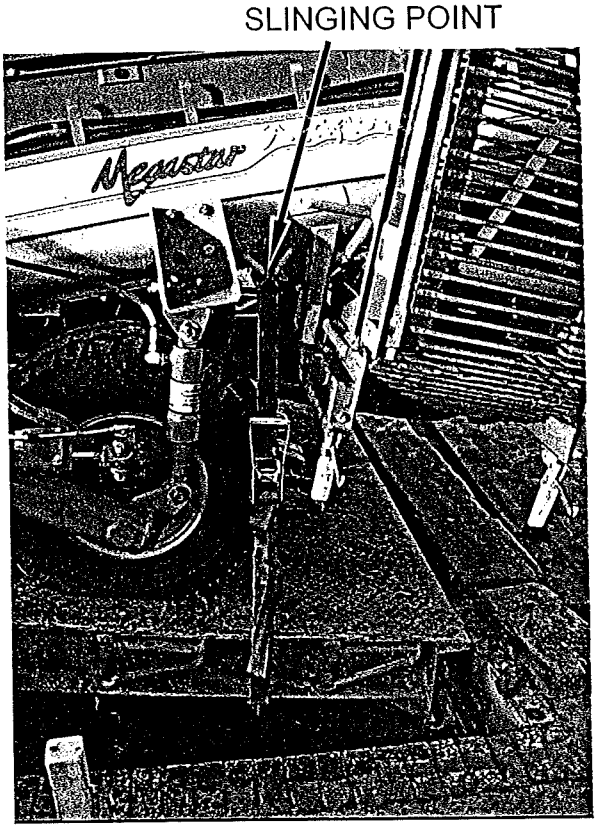


Fig 2.7

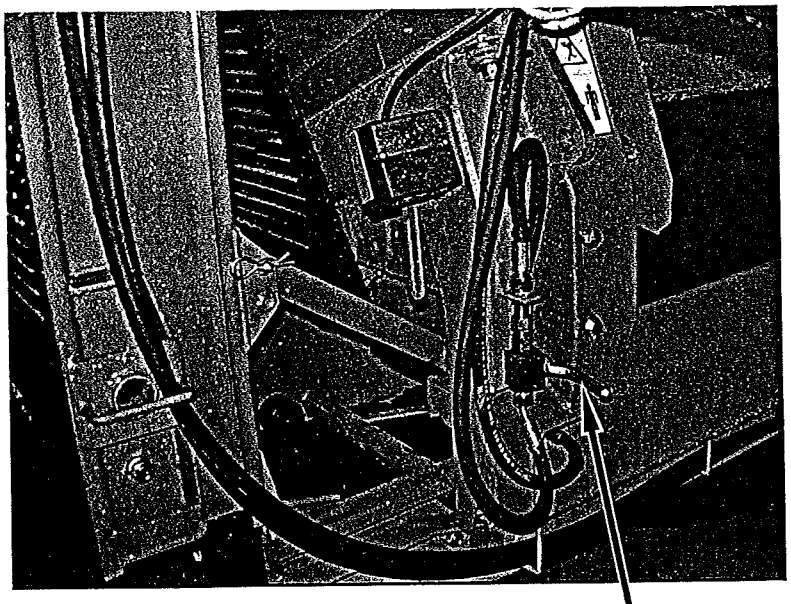


Fig 2.8

3.1 - SPECIFICATION

Dimensions (BASIC MACHINE)

Length	Without Boulder Box	6.45 M
	With Boulder Box	6.75 M
Width	Working	4.0 M
	Transport	2.7 M
Height	Working	2.1 M
Weight	Basic machine	2620 kg
	With Vari-flow	2945 kg
	With Boulder box	2885 kg
	With Vari-flow & Boulder box	3210 kg

Bed widths	1.5 to 1.8 M		
Tyre size (standard)	11.5/80-15.3	10	Ply
Tyre pressure	2.7 Bar		(40 p.s.i.)
Wheel nut torque	M18 x 1.5		310 NM

Hydraulic Requirements

Oil flow from tractor lift system (set to constant pump)	minimum	30 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 tractor hand book or dealer for further information.

Electrical Requirements

From tractor	12V DC **NEGATIVE EARTH**
	Fuse in power lead 30 amp

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.

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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 socket, 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, on a plate, are two strong magnetic feet which allow it to be mounted to any convenient metal plate in the tractor cab.

Coming out of the driver's control box is an electrical cable with a three pin plug attached (fig 4.1 item 2), this is for the input power and is plugged into item 1.

Between the driver control box in the tractor cab and the machine is an electrical cable with a multi pin plug, (fig 4.1 item 3) which is connected to the multi pin socket, (fig 4.1 item 4) mounted on the front of the machine.

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, 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 on/off power switch (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

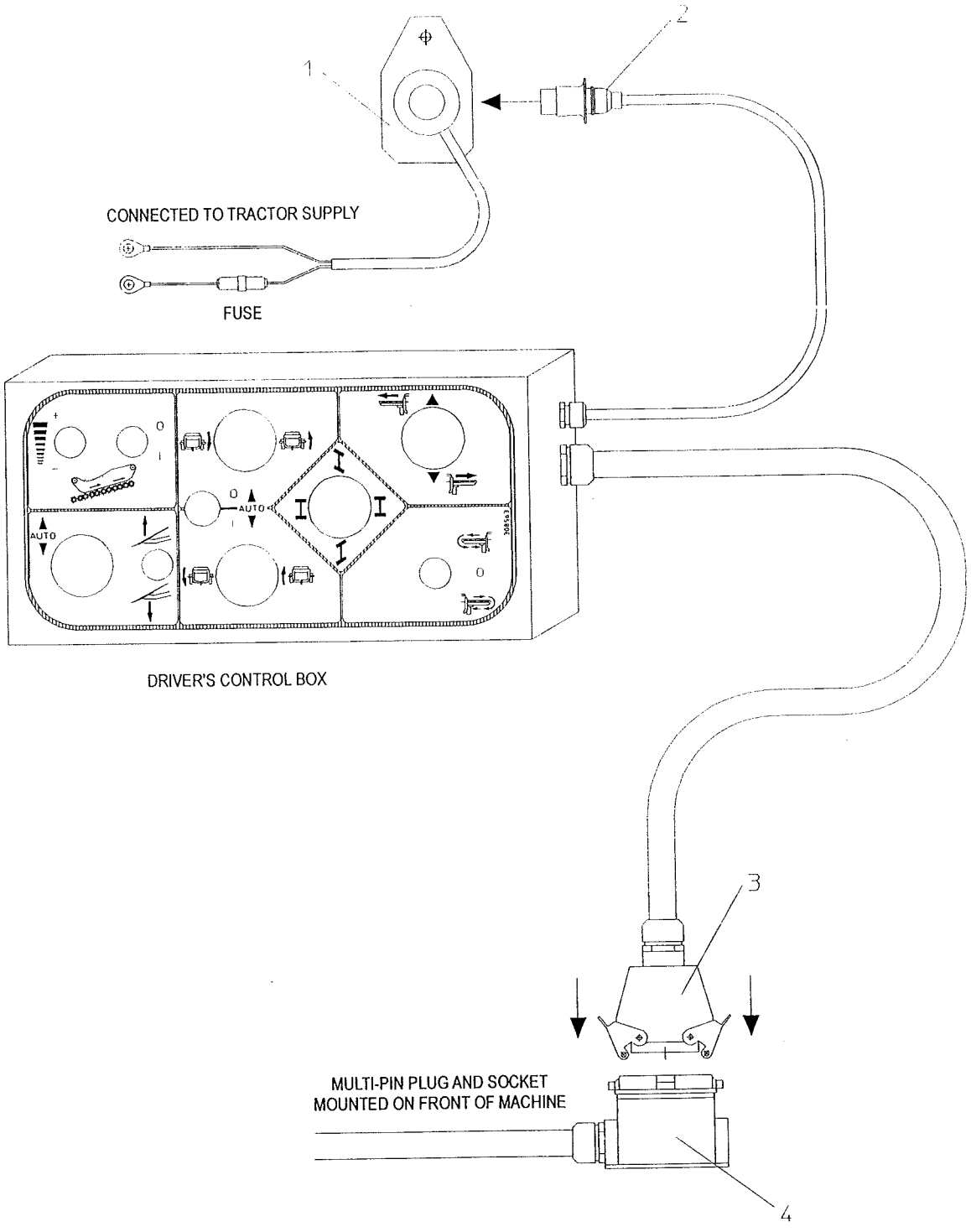


Fig 4.1

1. Battery fly lead
2. Power lead and drivers control box
3. Multi pin plug
4. Multi pin socket (on machine)

4.3 - CONTROLS

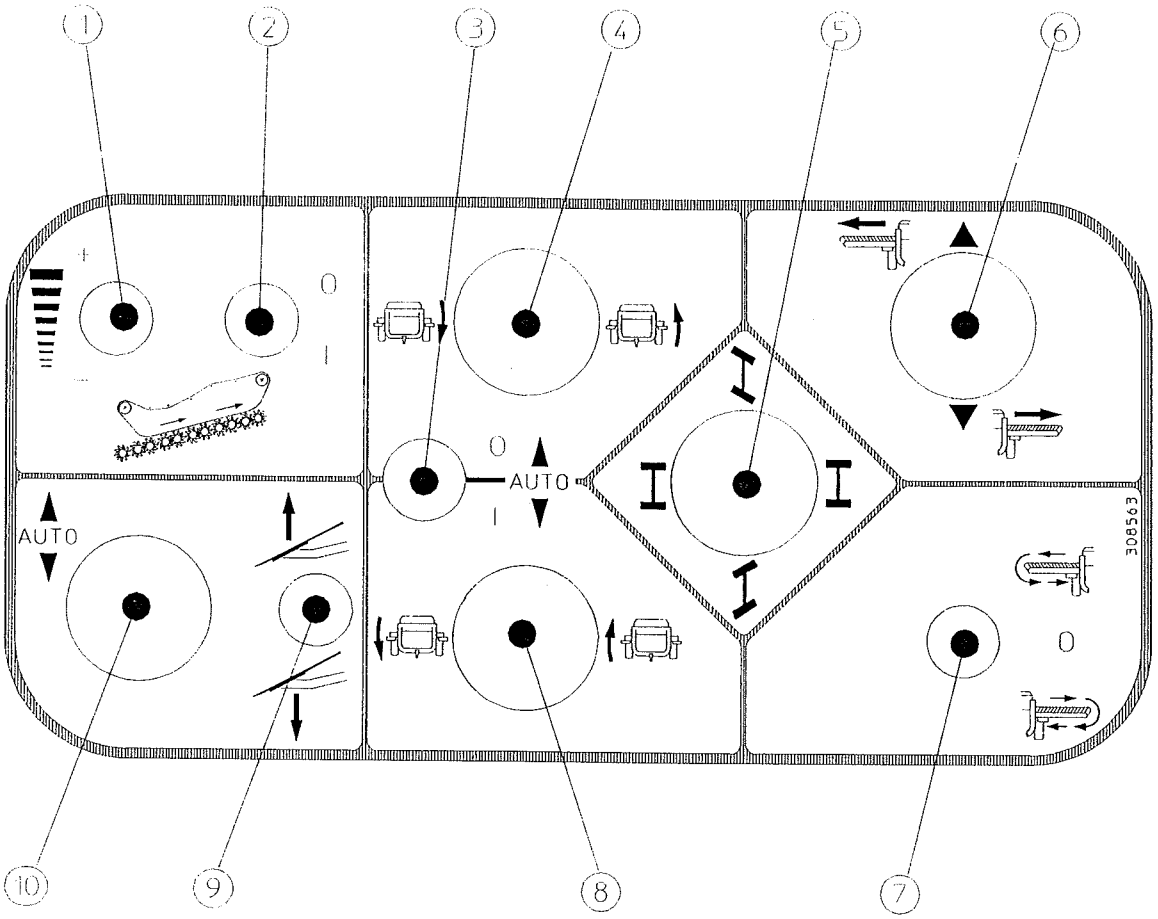


fig 4.2

1. Variweb speed control
2. Variweb on/off switch
3. Auto levelling on/off
4. Manual left hand levelling up/down
5. Steering control switch
6. Cross conveyor traverse to left or right
7. Cross conveyor drive direction
8. Manual right hand levelling up/down
9. Manual share control up/down
10. Auto share height on/off
11. Power ON/OFF switch (on end of box)
12. Safety cut out switch (end of box next to ON/OFF switch)

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

4.4 - CONTROLS

1. Variflow speed control

This control consists of one switch, a 3 position self-centring toggle switch which controls the speed of the Variflow. Operating the switch, which is marked '+' and '-' will increase or decrease the speed of the web. When the switch is released the speed will stay in that set position.

2. Variflow on/off switch

This control consists of one switch, a two position toggle switch, which switches the Variweb ON or OFF

3. Auto levelling on/off

This control consists of one switch, a two position toggle switch, which switches the Auto levelling ON or OFF

4. Manual left hand levelling up/down

This control consists of one switch, a 2 position, spring centre joystick, which operates the hydraulic cylinders for the manual positioning of the axle levelling, on the left hand side of the machine. Moving the joystick to the left or right will extend or retract the hydraulic cylinder, raising or lowering the machine. When the joystick is released the cylinders will stay in that position.

5. Steering control switch

This control consists of one switch, a 4 position, spring centre joystick, which operates the hydraulic cylinders for the positioning of the axle steering. Moving the joystick to the left or right will extend or retract the hydraulic steering cylinder on the axle, controlling the manual operation of the axle steering to the left or right. A steering indicator shows in what position the steering is set (fig 4.3). When the joystick is released the cylinders will stay in that position. While moving the joystick up or down will switches the auto centre ON. This will automatically return the axle to the straight ahead position (whilst the switch is being held).

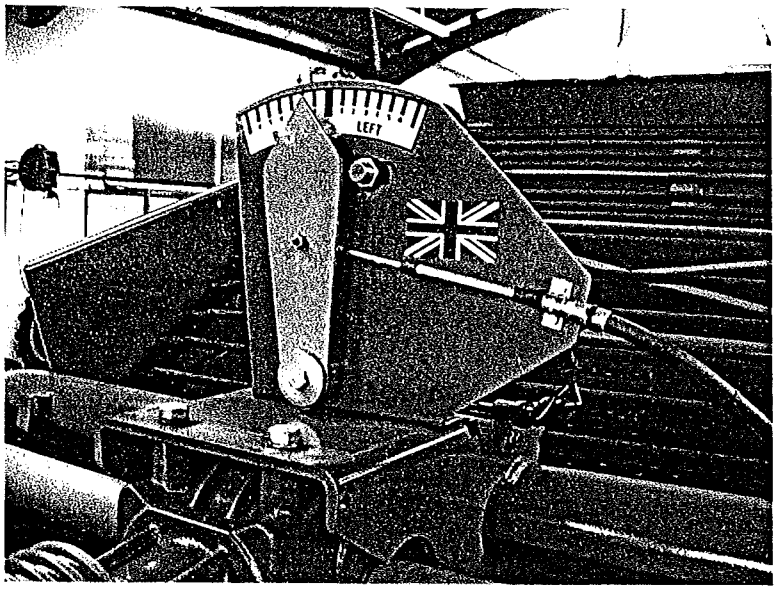


Fig 4.3

6. Cross conveyor traverse to left or right

This control consists of one switch, a 2 position, spring centre joystick, which controls the position of the cross conveyor traverse. Move the switch to the left or right will extend or retract the hydraulic cylinder controlling the position of the conveyor. When the joystick is released the cylinders will stay in that position.

7. Cross conveyor drive direction

This control consists of one switch a 3 position toggle switch, which latches in all 3 positions and controls the direction of rotation of the cross conveyor drive. When latched the in the centre position the drive is switched OFF. While switching left or right will drive the cross conveyor to the left or right.

8. Manual right hand levelling up/down

This control consists of one switch, a 2 position, spring centre joystick, which operates the hydraulic cylinders for the manual positioning of the axle levelling, on the left hand side of the machine. Moving the joystick to the left or right will extend or retract the hydraulic cylinder, raising or lowering the machine. When the joystick is released the cylinders will stay in that position.

9. Manual share control up/down

This control consists of one switch, a 3 position self-centring toggle switch which controls the manual position of the share. Operating the switch, will increase or decrease the depth of the share. When the switch is released the depth will stay in that set position.

10. Auto share height on/off

This control consists of a push button switch 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.

11. Power ON/OFF switch

This control consists of a rotary ON/OFF switch (fig 4.4 item 1) which controls the electrical supply to the control box and is operated by rotating to turn ON or OFF. WHEN OFF, ALL ELECTRICAL POWER TO THE MEGASTAR ELECTRICAL CIRCUIT IS TURNED OFF.

12. Safety cut out switch

This is a safety cut out switch which protects the control box from over voltage. (fig 4.4 item 2) 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.

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.

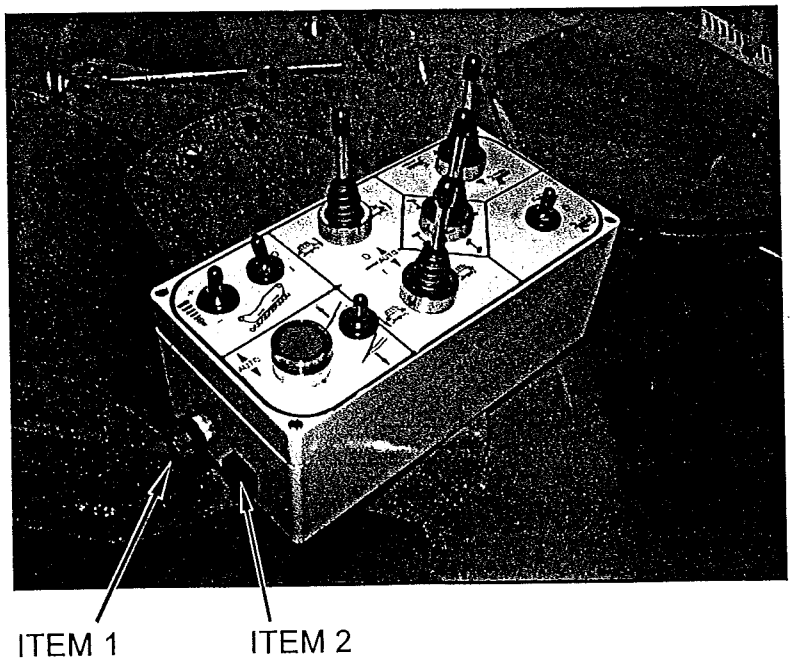


Fig 4.4

5.1 – ATTACHING TO TRACTOR

Tractor Wheel Settings

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

Drawbar

The machine drawbar is designed to be attached to the tractor's swinging drawbar. The swinging drawbar should be fixed in its central position. Consult the tractor manufacturer's handbook for details of the tractor's swinging drawbar. The machine drawbar is fitted with a captive swivel eye to allow for angular changes. This should be checked regularly to ensure it is free moving, and kept greased to prevent excessive wear.

The machine must be attached to the tractor using the proper type and size of pin, which should be securely fix by the correct means. This will ensure it cannot be accidentally pulled or pushed out of place whilst the machine is in use.

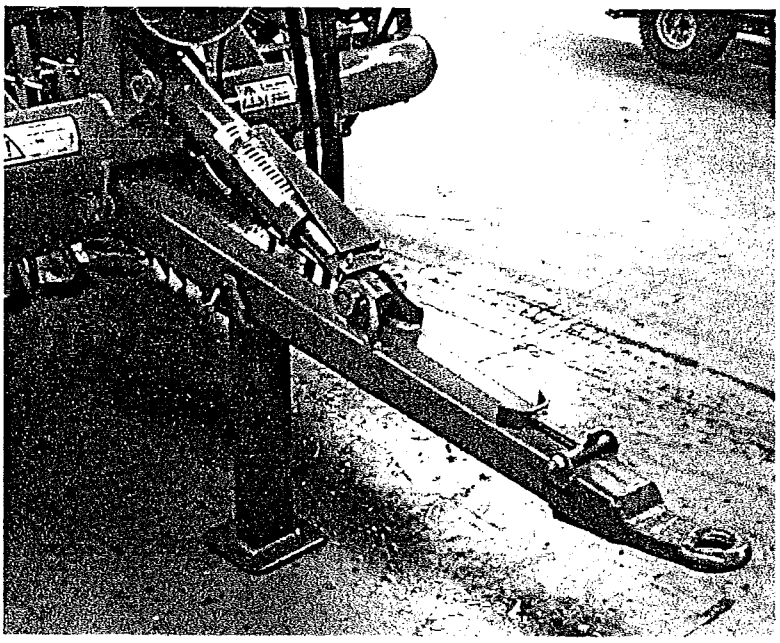


Fig 5.1

5.2 – 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). It is possible to adjust the height of the drawbar when fitting to the tractor. Connect the hydraulic hoses to the tractor, open the transport lock valve (Fig 5.2 item 2) and connect the electric control box. Operate the up and down share control in the driver's control box until the correct height of the drawbar has been reached.

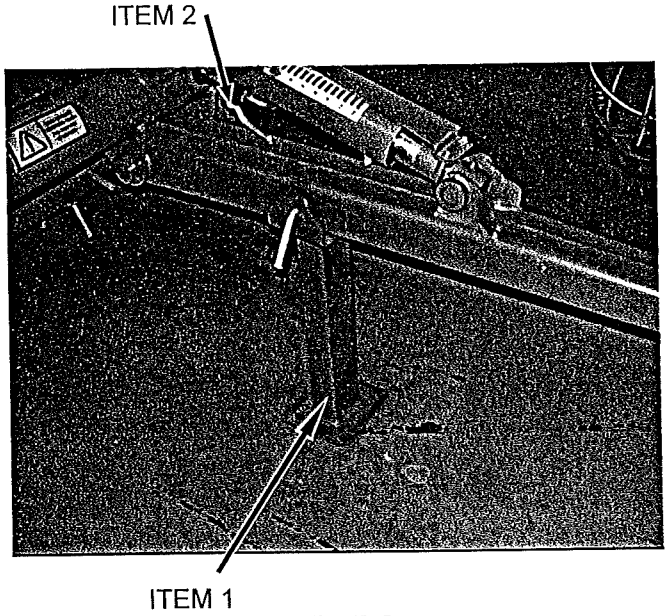


Fig 5.2

When the machine has been securely attached to the tractor, the jackstand can be disconnected by operating the share lift switch, on the driver's control box. When the machine has been raised enough, the anchor pin that secures the jackstand to the drawbar can be removed (Fig 5.3 item 1). The jackstand can then be put into the stored position on the right hand side of the chassis (Fig 5.4) and secured in place by the same pin (Fig 5.4 item 1).

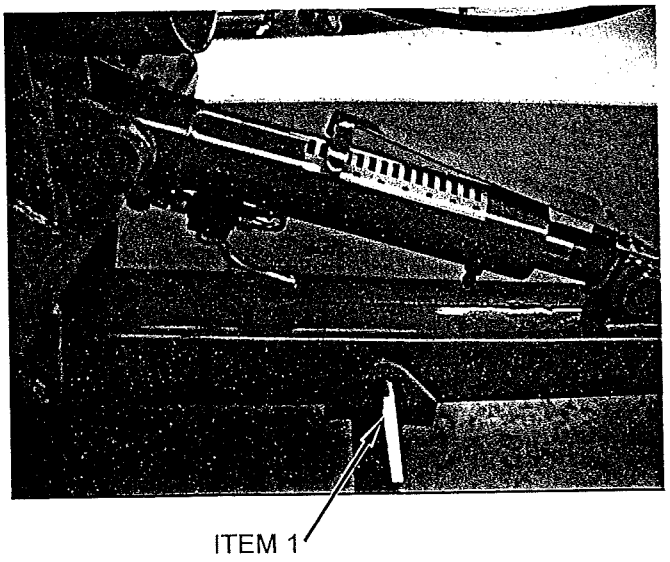


Fig 5.3

5.3 – ATTACHING TO TRACTOR

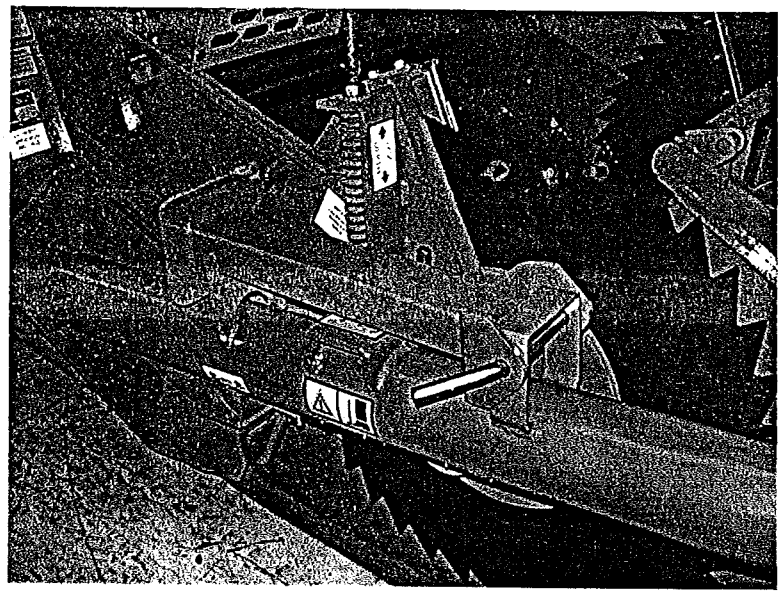


Fig 5.4

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

When disconnecting the machine from the tractor 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 drawbar pin from the tractor.

PTO Shaft

The machine 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 380 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 5.5).

5.4 – ATTACHING TO TRACTOR

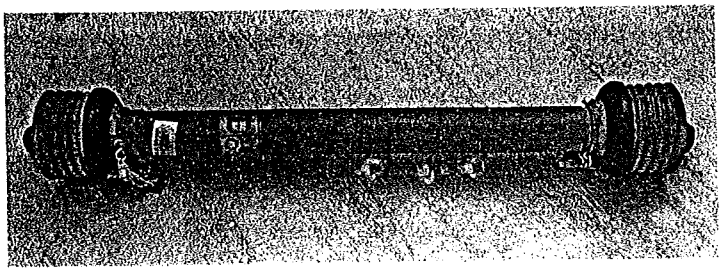


Fig 5.5

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.

PTO rest

On the front of the drawbar is a rest for the PTO shaft when the machine is disconnected from the tractor (fig 5.6 item 1). The rest folds down out of the way when the machine is attached to the tractor and in work.

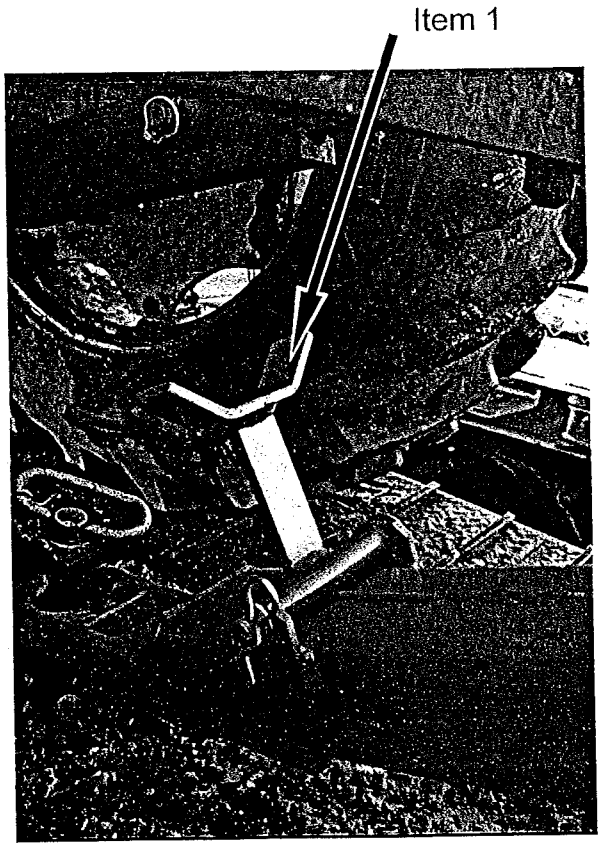


Fig 5.6

5.5 – ATTACHING TO TRACTOR

Electrical connections

See section 4

Hydraulic connections

See section 3 for information on hydraulic requirements.

The flow and return hoses from the machine must be connected to their respective external service connections of the tractor hydraulic system.

The machine hoses are identified by labels marked with arrows indicating the direction of oil flow (Fig 5.6).

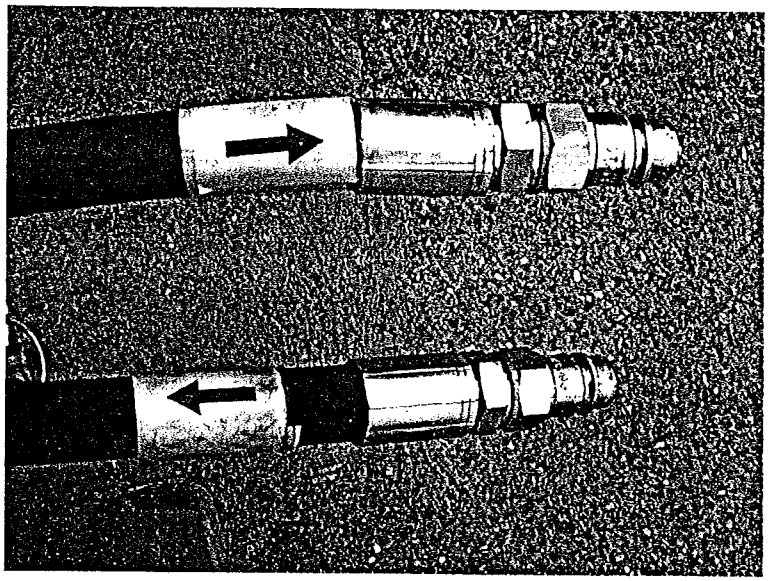


Fig 5.6

The tractor hydraulic system must be set to constant pumping. Consult the tractor manufacturers handbook for details about connecting external equipment to hydraulic system and hydraulic pump settings.

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 main hydraulic valve on the Megastar, is mounted on the left hand side of the main

frame, near the front (Fig 5.7). Incorporated in this valve assembly is an end section (Fig 5.7 item 1) which contains a screw which enables easy changing from closed to open centre and vice versa.

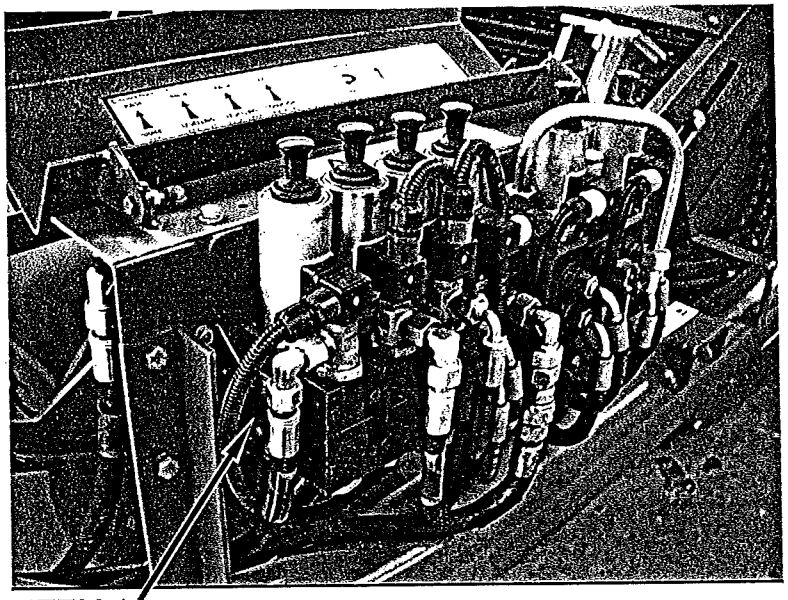


Fig 5.7

The screw is located in the top face of the end section (Fig 5.8 item 1). For closed centre configuration tractors, turn the screw clockwise until fully closed. For open centre, turn the screw anticlockwise until fully out.

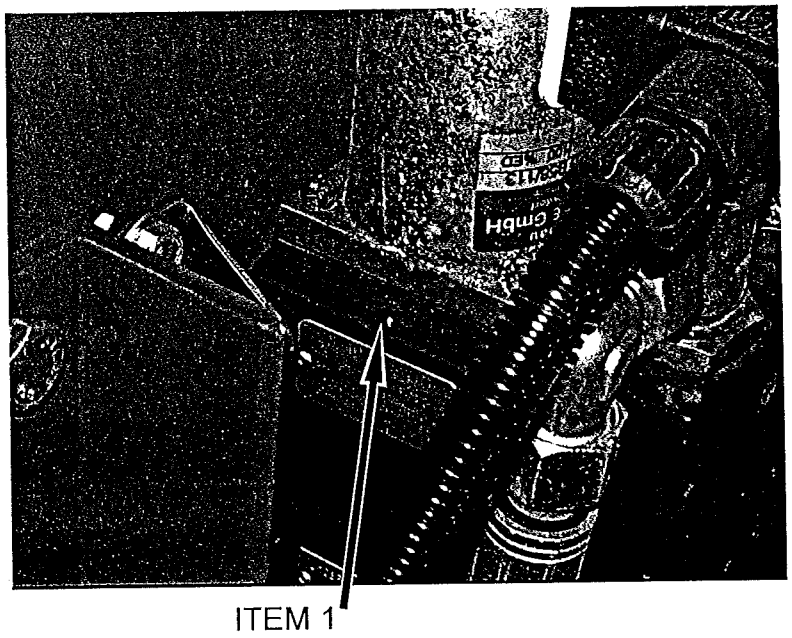


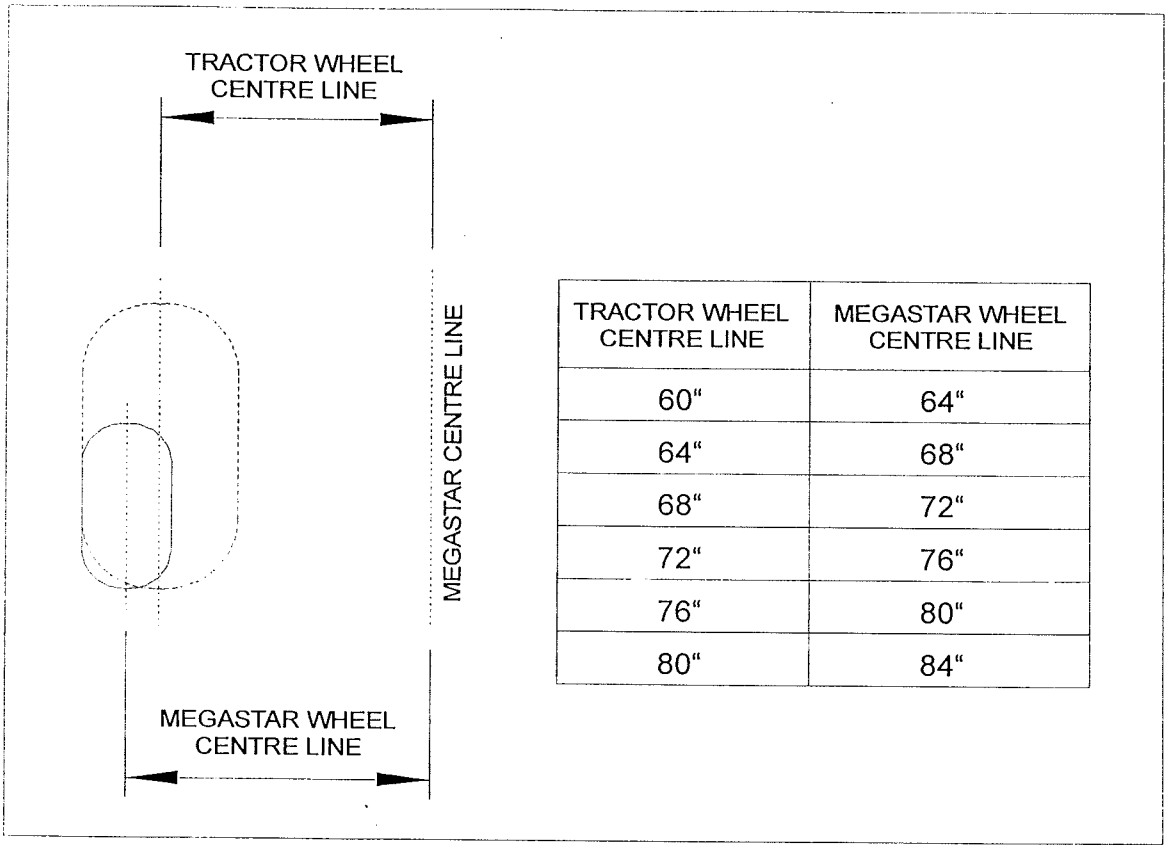
Fig 5.8

6.1 – PREPARING FOR WORK

In order to prepare the machine for work in a specific bed width, the following items must be checked, and adjusted if necessary.

Wheel settings

The Megastar wheels should be set so that their outside edges are aligned with the outside edges of the tractor wheels (fig 6.1).



TRACTOR WHEEL CENTRE LINE	MEGASTAR WHEEL CENTRE LINE
60"	64"
64"	68"
68"	72"
72"	76"
76"	80"
80"	84"

Fig 6.1

Wheel adjustments

Each axle assembly is held by a pivot pin (fig 6.2 item 1) to an attachment bracket, which is bolted by 4 x 16 mm setstuds to a mounting welded on the main chassis. Moving these brackets along a series of holes in the mounting (fig 6.3), adjusts the wheels to suit the selected bed width. The attachment brackets must be changed from one side of the machine to the other in order to attain the 80" and 84" wheel settings.

6.2 – PREPARING FOR WORK

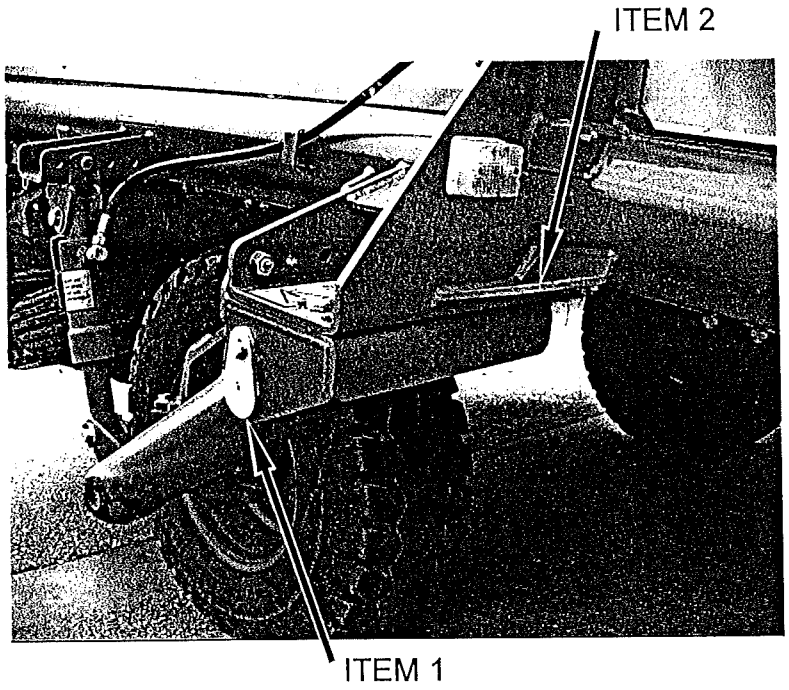


Fig 6.2

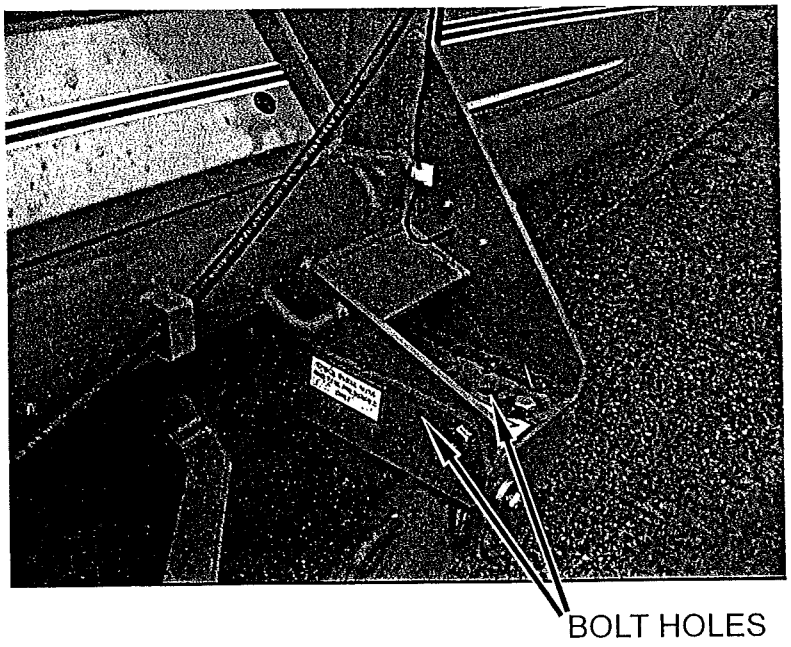
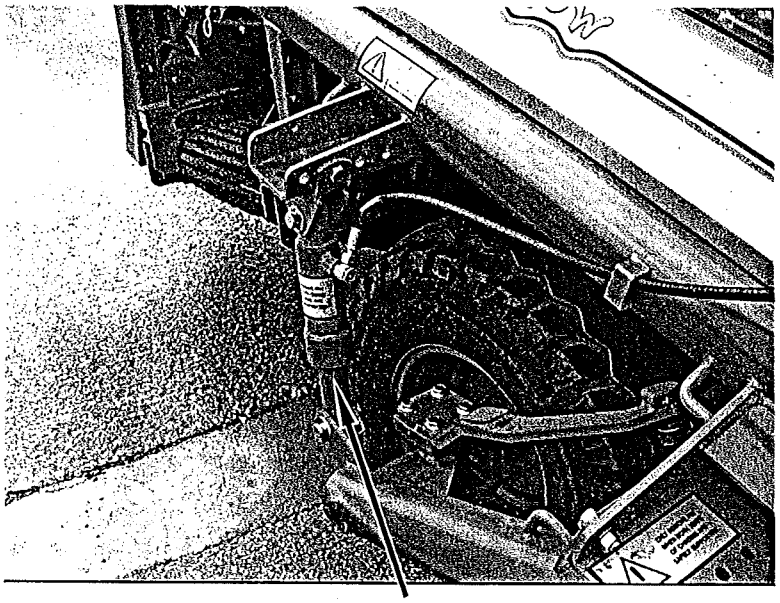


Fig 6.3

6.3 – PREPARING FOR WORK

In addition to adjusting the axle assembly the axle support leg or level leg ram (fig 6.4 item 1)must be adjusted inline with the axle.



Item 1

Fig 6.4

Jacking operation must only be carried out whilst the machine is correctly attached to the tractor, and must remain attached until the whole operation has been completed. To change wheel settings where it is not necessary to swap attachment brackets from side to side, a trolley jack and an axle stand of minimum 2000 kg. capacity is required. If the attachment brackets need to be swapped from side to side, then two axle stands with a minimum capacity of 2000 kg. are required.

First place chocks under the opposite wheel to the one being raised to prevent the machine moving. Place the trolley jack on firm, level ground under the relevant side jacking point (fig 6.2 item 2).jack up the machine until the wheel is just clear of the ground. Place the axle stand under the main chassis of the machine in case the jack should become dislodged.

Remove the two bolts which hold the two halves of the track rod together (fig 6.5 item 1)

Remove the bottom pin in the axle support leg or level leg ram (fig 6.4 item 1)

Whilst supporting the axle assembly undo and remove the 4 x 16 mm set studs and nuts holding the attachment bracket to the chassis mounting. The axle assembly can now be placed in its new position and the 4 x 16 mm set studs and nuts can be refitted, and tightened securely.

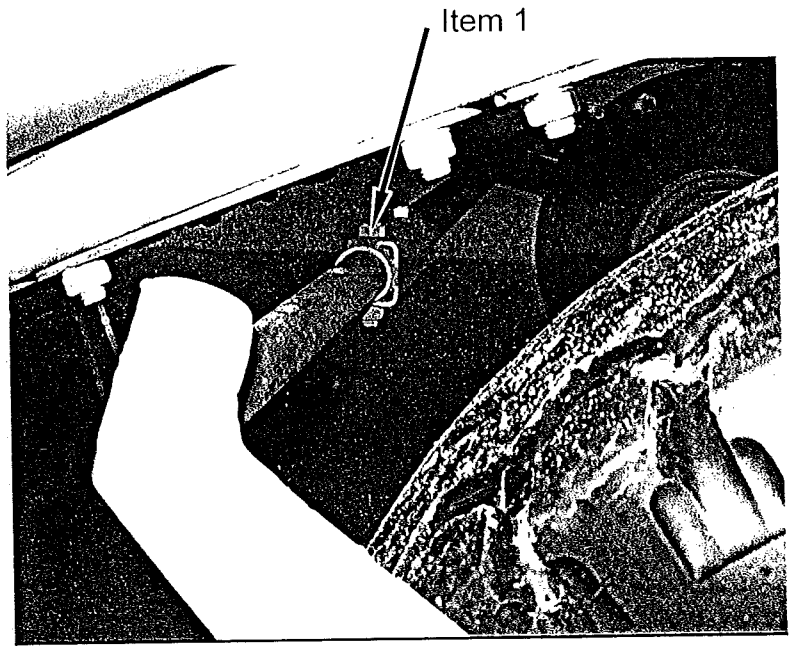


Fig 6.5

Remove the two set studs and nuts holding the top mounting bracket of the axle support leg or level leg ram (fig 6.4 item 1), and position it inline with the new axle position and refit and tighten securely.

Refit the bottom pin in the axle support leg or level leg ram (fig 6.4 item 1)

After altering the wheel settings the track rod must be re-set so that the wheels are in the straight ahead position when the steering cylinder is in the centre of its travel.

With the hydraulics and electrics connected operate the steering (see controls section 4) to centralise the steering ram. Switch off tractor and disconnect the hydraulics and electrics. Replace the two bolts which hold the two halves of the track rod together (fig 6.5 item 1) so that both wheels are in the straight ahead attitude, with out disturbing the ram position. The wheels should have a slight toe in attitude of approximately 25 to 30 mm (measured on the outside diameter of the tyre). Fine adjustment of the track rod can be achieved by removing the ball joint on the end of the track rod, loosening the lock nut and winding the ball joint in or out. Remember to retighten the lock nut when adjustments have been completed.

6.5 – PREPARING FOR WORK

Both wheels should be set to the same hole positions on the attachment brackets, so that the machine remains symmetrical about the centre line of the machine

Ensure that you retighten all nuts and bolts after adjustments have been completed.

Shares

As standard the Megastar is fitted with a 7 piece share blade arrangement. There are a variety of blade lengths and shapes, some of which are shown in the option section of this book. Consult your authorised Richard Pearson Ltd. dealer for further assistance.

The outside blades come in two different widths, standard and wide. This is to cope with the variety of bed widths. In general the standard outer blade is fitted for the narrower bed widths were the wide outer blade is fitted for the wider bed widths.

If blade widths are altered then the discs positions will have to be adjusted to suit.

Discs

Both discs should be adjusted so that the inner faces are approximately 5 mm from the outside edge of the share blades.

To adjust the discs, slacken clamp bolts (fig 6.6 item 1) on the disc hub mounting and slide the disc hub in or out to the required position. Retighten clamp bolts.

Disc scrapers will need to be adjusted to suit new disc position, and should be adjusted so that they are just clear of the disc surface. These are adjusted by slackening clamp bolts (fig 6.7 item 1) repositioning scraper and retightening.

As the disc scraper wears it can be adjusted closer to the disc by slackening clamp bolts (fig 6.7 item 2) repositioning scraper and retightening.

6.6 – PREPARING FOR WORK

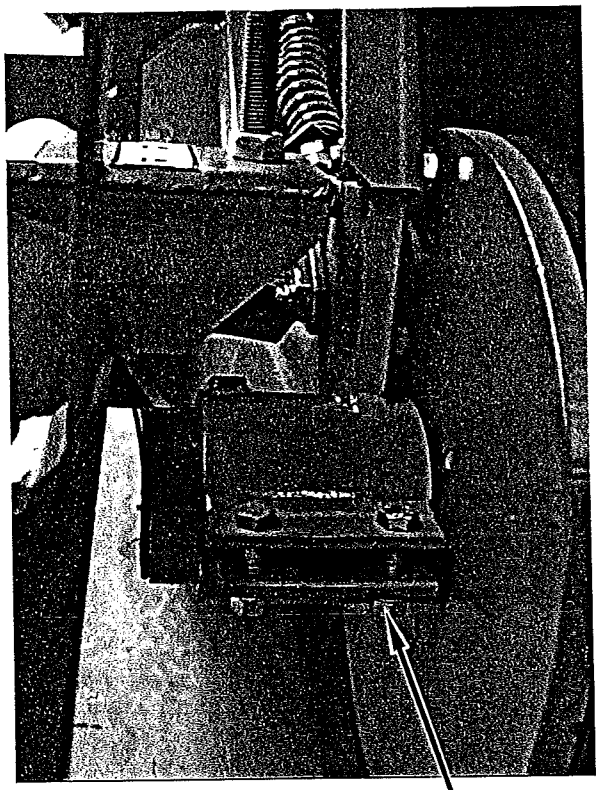


Fig 6.6

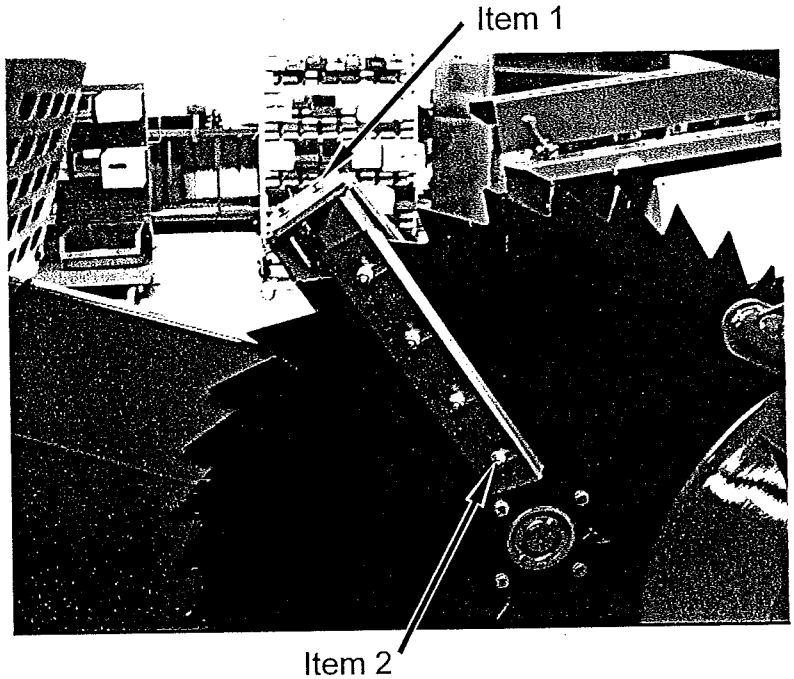


Fig 6.7

7.1 – OPERATING ADJUSTMENTS

Depth control system

The Megastar is fitted with an automatic depth control system to ensure an even depth of soil in the finished bed. A sensor diabolo runs on top of the pre-formed bed following the contours. The diabolo is linked to a target finger, which operates either of a pair of proximity switches (fig 7.1), which control, via the hydraulic valve block, the operation of the depth control cylinder between the drawbar and main chassis.

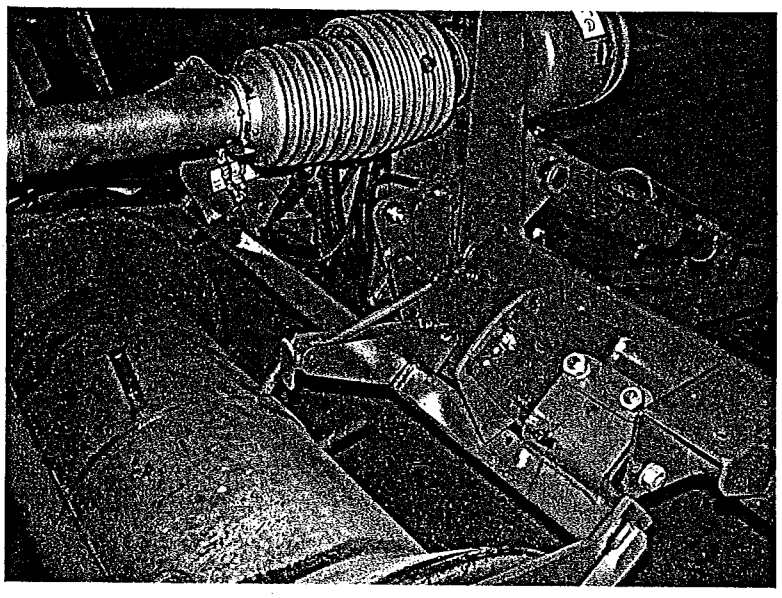


Fig 7.1

Depth adjustment

By adjusting the relationship between diabolo and trigger plate the depth is altered. This is achieved by turning the handle (fig 7.2 item 1) to increase or decrease the depth.

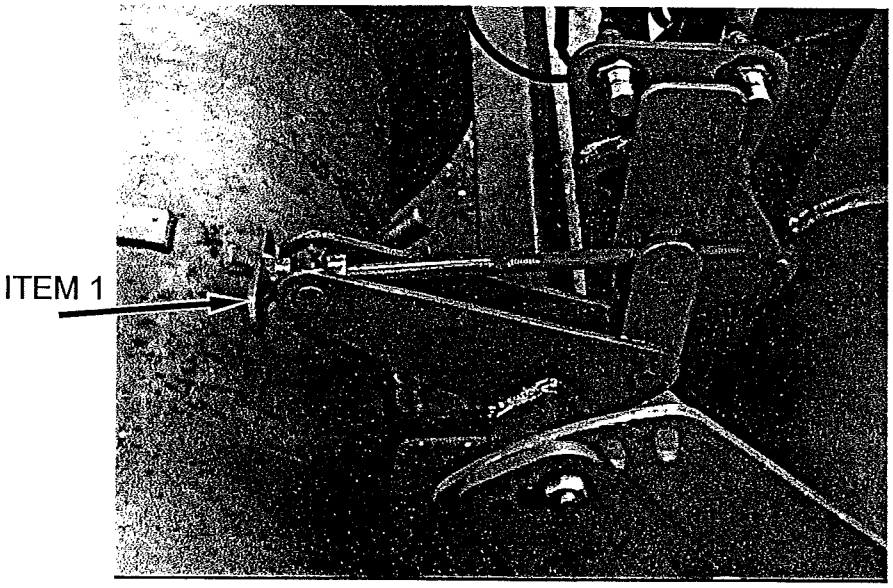


Fig 7.2

7.2 – OPERATING ADJUSTMENTS

Depth indicator

The depth indicator plate and decal, fitted on the depth control hydraulic cylinder, gives the operator a visual indication of the action of the sensing system (fig 7.3).

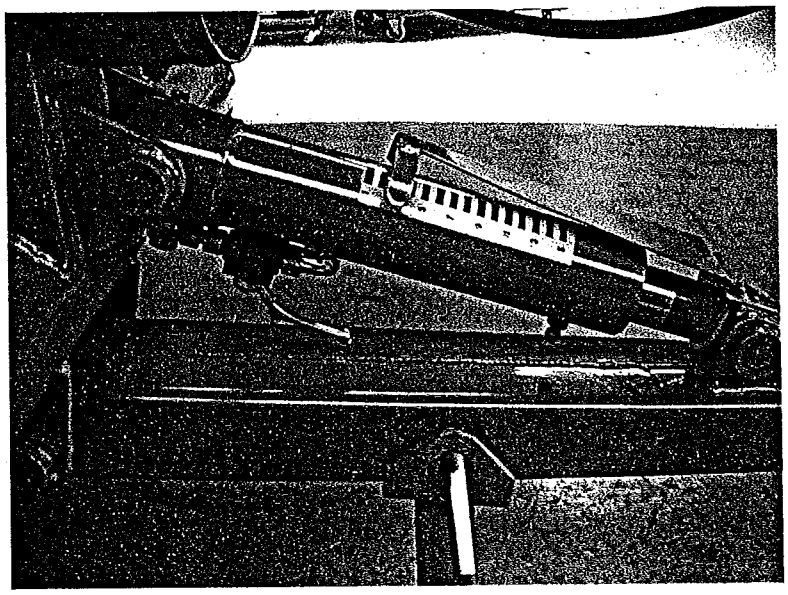
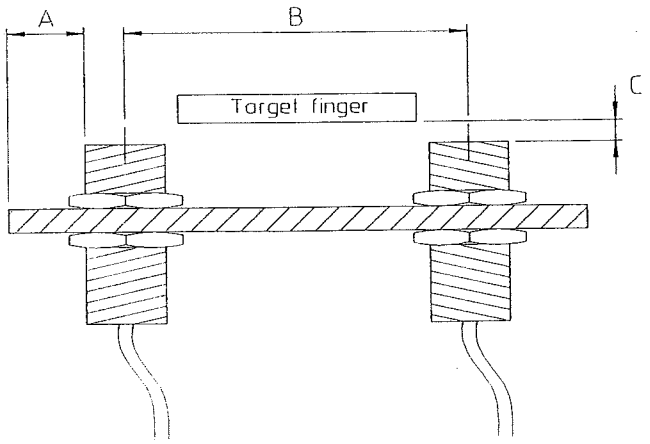


Fig 7.3

Proximity switches

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



7.3 – OPERATING ADJUSTMENTS

Diabolo resilient mounting adjustment

The diabolo is supported by two resilient mountings. By adjusting these units it is possible to adjust the amount of pressure that the diabolo put on to the soil.

This adjustment must be made with the machine raised from work, and with the diabolo hanging freely. Slacken the resilient mounting pivot bolts (fig 7.4 item 1), support the diabolo and remove the pressure setting bolts (fig 7.4 item 2). Raise or lower the diabolo until the holes align with the chosen new position and refit the pressure setting bolts. Retighten the resilient pivot mounting bolts securely, and lower the diabolo.

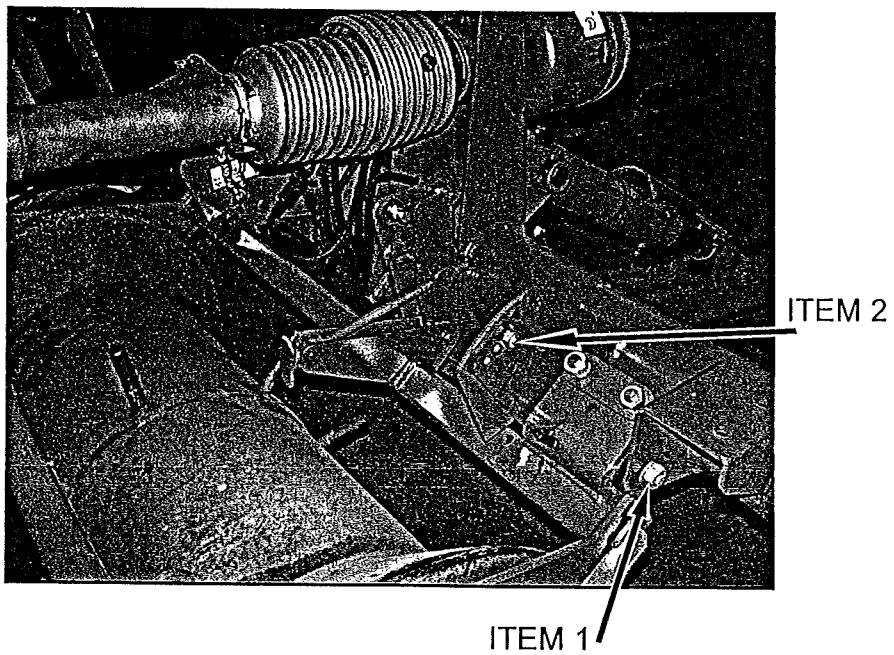


Fig 7.4

Diabolo transport lock

To stop the diabolo from bouncing as the machine is transported a strut is located between the diabolo frame and the main chassis to lock it in position (fig 7.5 item 1).

Remember to disconnect the transport lock before commencing work.

7.4 – OPERATING ADJUSTMENTS

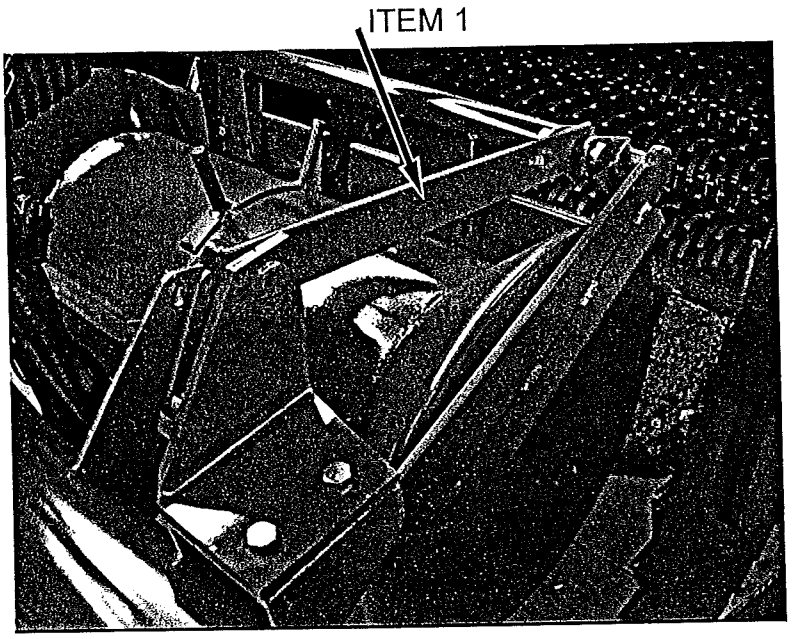


Fig 7.5

Disc adjustment

Both discs can be adjusted for width, vertical stop position and downward pressure.

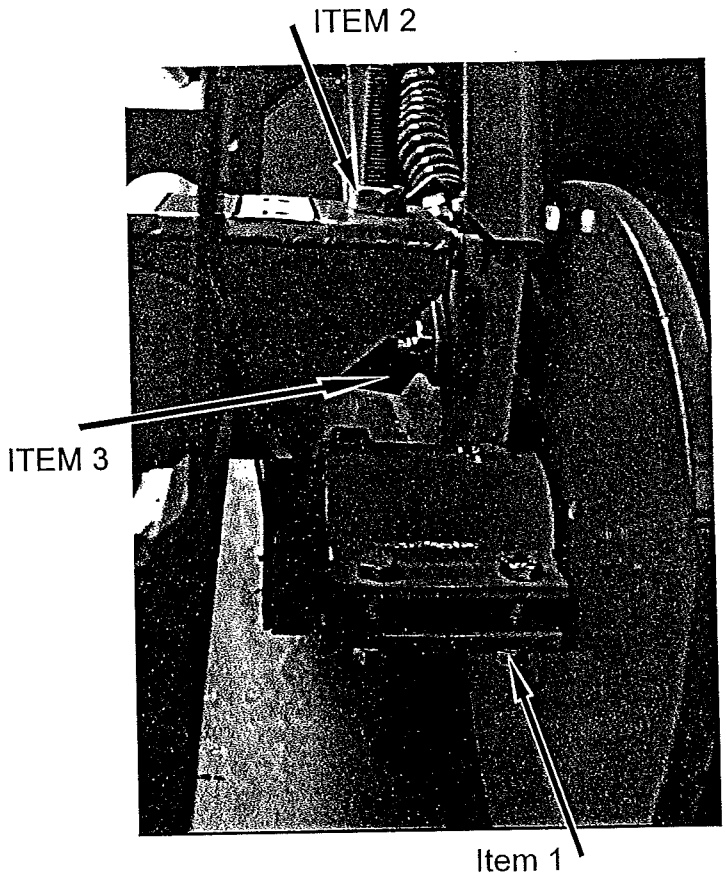


Fig 7.6

7.5 – OPERATING ADJUSTMENTS

To adjust the discs for width, slacken clamp bolts (fig 7.6 item 1) on the disc hub mounting and slide the disc hub in or out to the required position. Retighten clamp bolts. As a guide the discs should be adjusted so that the inner faces are approximately 5 mm from the outside edge of the share blades.

Disc scrapers will need to be adjusted to suit new disc position, and should be adjusted so that they are just clear of the disc surface. These are adjusted by slackening clamp bolts (fig 7.7 item 1) repositioning scraper and retightening.

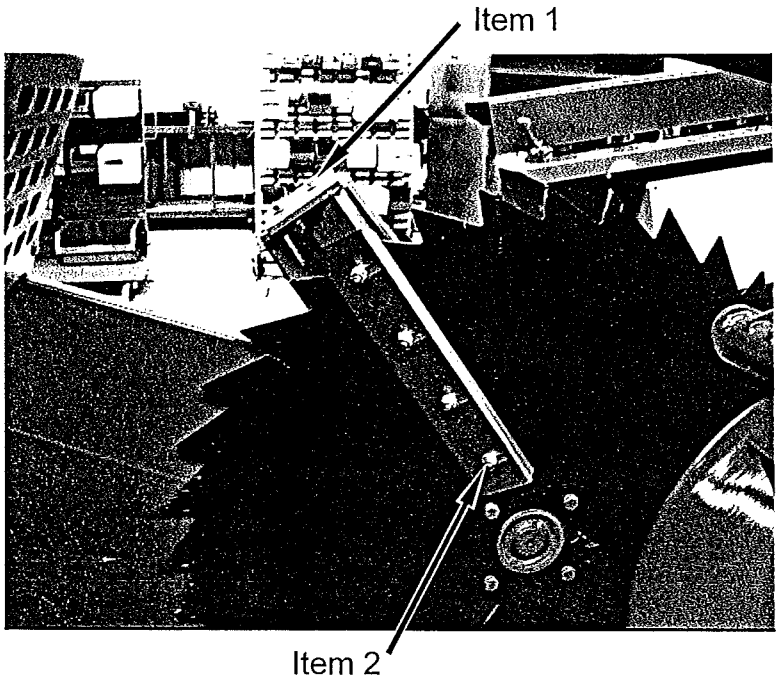


Fig 7.7

As the disc scraper wears it can be adjusted closer to the disc by slackening clamp bolts (fig 7.7 item 2) repositioning scraper and retightening.

The stops that limit the amount of vertical movement of the discs can be adjusted by:

Upward stop (fig 7.6 item 3), by loosening lock nut (fig 7.6 item 3), rotating stop item 3 to new position and then retighten lock nut.

Downward stop (fig 7.8 item 1), adjust nut up or down spring rod to limit the downward travel.

7.6 – OPERATING ADJUSTMENTS

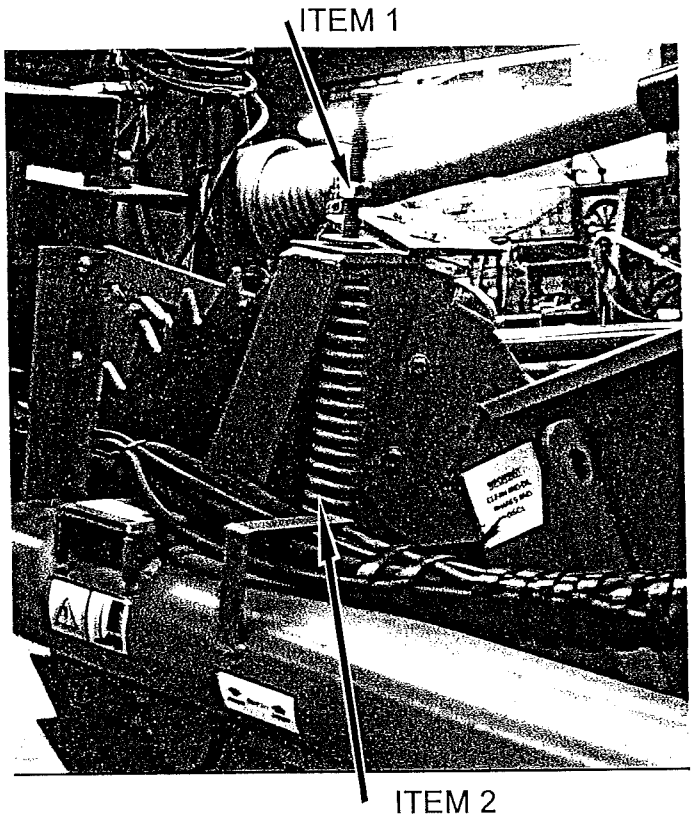


Fig 7.8

To adjust downward pressure, adjust the lock nut at the bottom of the spring (fig 7.8 item 2). Adjusting the nut up will increase the pressure while moving the nut down will decrease the pressure.

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.

A steering indicator is mounted on the cross bridge of the main chassis, which is in full view of the driver, showing the attitude of the wheels (fig 7.9). The indicator is operated by a cable, which is attached to the left hand steering arm.

Two proximity switches are mounted on the steering indicator back plate, which controls the self-centring of the steering. The positions of these switches are factory set and should not need to be adjusted.

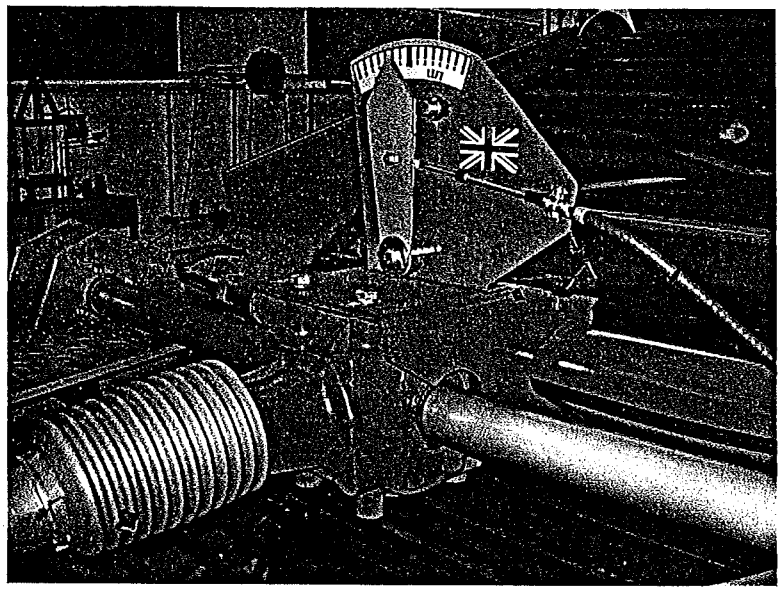


Fig 7.9

Cross conveyor

The left hand end of the conveyor can be folded vertically to reduce the width for transport and storage. To unfold the cross conveyor for work:

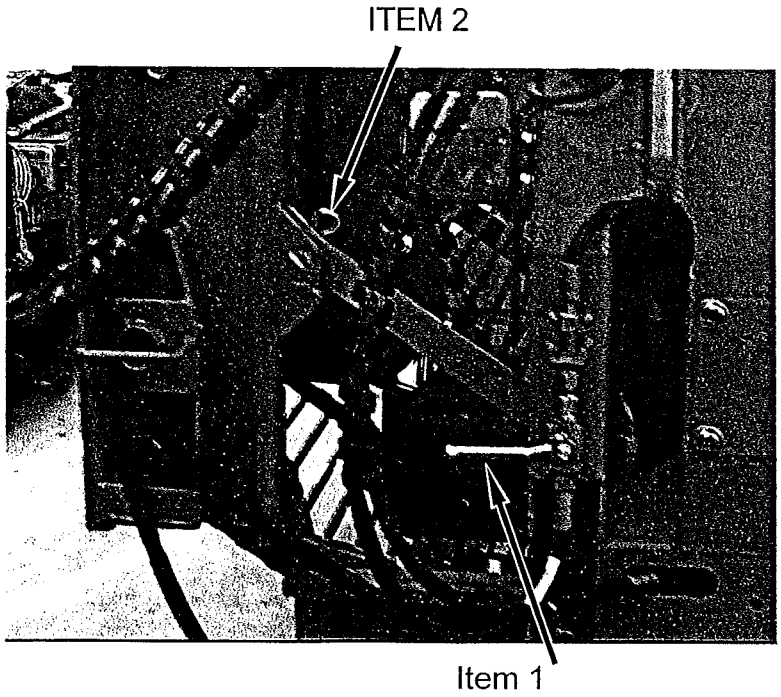


Fig 7.10

Turn transport lock handle to the open position (fig 7.10 item 1), handle vertical. Remove 'R' clip and safety pin from hook. (Fig 7.10 items 2), and operate cross conveyor traverse control to the right. When the cross conveyor is full down, the left hand section must be locked to the right hand section

before work can commence. This is achieved with the over centre latches (fig 7.11 item 1), hooking into the eyelets on the under side of the left hand cross conveyor section. Ensure both latches are properly located.

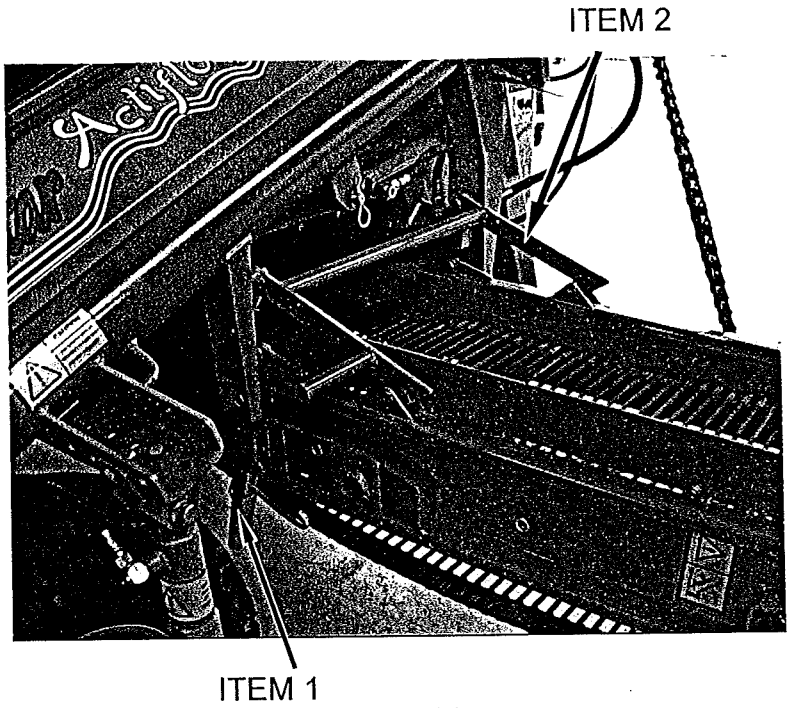


Fig 7.11

When the over centre latches have been locked in place, the hook (fig 7.11 item 2), can be held in an upper position out of the way by support (fig 7.12 item 1).

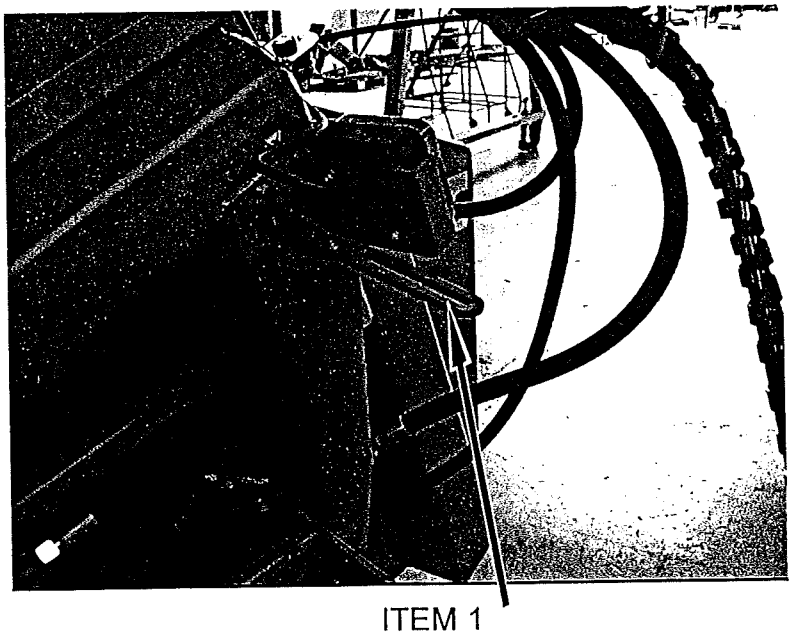


Fig 7.12

Remember to relocate the 'R' clip and safety pin. (Fig 7.10 items 2), into the hook (fig 7.11 item 2).

7.9 – OPERATING ADJUSTMENTS

To fold the cross conveyor up for transport it is the reverse procedure.

Remove 'R' clip and safety pin. (Fig 7.10 items 2), from hook (fig 7.11 item 2),

Release hook from support (fig 7.12 item 1).

Traverse cross conveyor until hook drops over hook point on left hand section (fig 7.13 item 2).

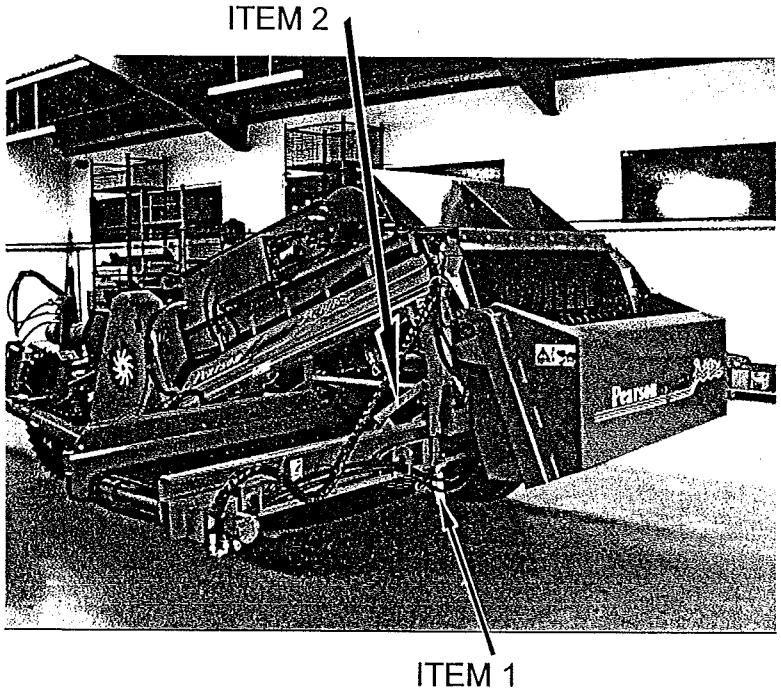


Fig 7.13

Release the over centre latches (fig 7.13 item 1), making sure they are unhooked from the eyelets.

Traverse cross conveyor fully to the left and lift the left hand section up

Turn transport lock handle to the closed position (fig 7.10 item 1), handle horizontal. Replace 'R' clip and safety pin in hook. (Fig 7.10 items 2),

Ensure that people are clear of the conveyor when raising and lowering.

7.10 – OPERATING ADJUSTMENTS

Cross conveyor drive

The drive to the cross conveyor is by means of two hydraulic motors, one at either end. The driver's control box controls the rotation of these motors.

A graduated black knob on the underside of the hydraulic valve bank (fig 7.14 item 1) controls the speed of the cross conveyor. Turning this knob to a higher number will increase the speed of the cross conveyor and vice versa. The speed of the conveyor will be dependent on the volume of material being discharged, but a very high speed should not be necessary, as this will cause excessive wear.

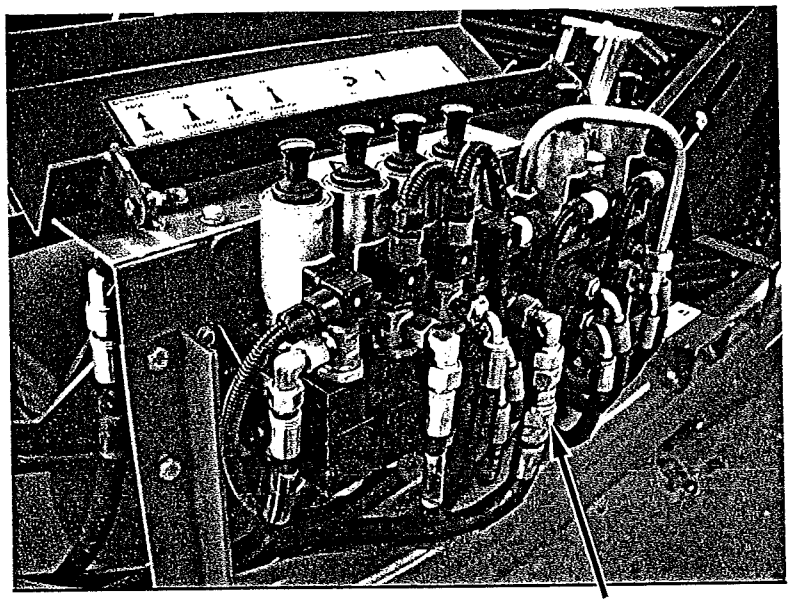


Fig 7.14

In order to place the conveyed material into the centre of the designated trench, the speed of the conveyor must be co-ordinated with the amount of traverse.

If too much material is lost through the cross conveyor web onto the top of the bed, plastic web covers can be fitted to reduce the gaps between web bars.

7.11 – OPERATING ADJUSTMENTS

Star shaft removal

Disconnect and remove the drive chain(s). Support the star shaft adequately and remove the bolts from the bearing mounting plates at both ends of the shaft. The shaft can then lowered from the machine and moved clear for any work to be carried out. Re-fitting is the reversal of this procedure.

Actiflow star spacing

The Megastar is available as a clod separating machine or as a stone separator, the difference being the spacing of the star along the shafts. Each machine can be converted to the other by changing the star spacing or by fitting alternative, ready built up shaft assemblies. The definition of clod or stone separators is not rigid and it may well be that either settings may work satisfactorily in different conditions, by using variations in forward and rotational speeds.

Only general advice can be given with regard to star spacing as any settings must be governed by soil and weather conditions.

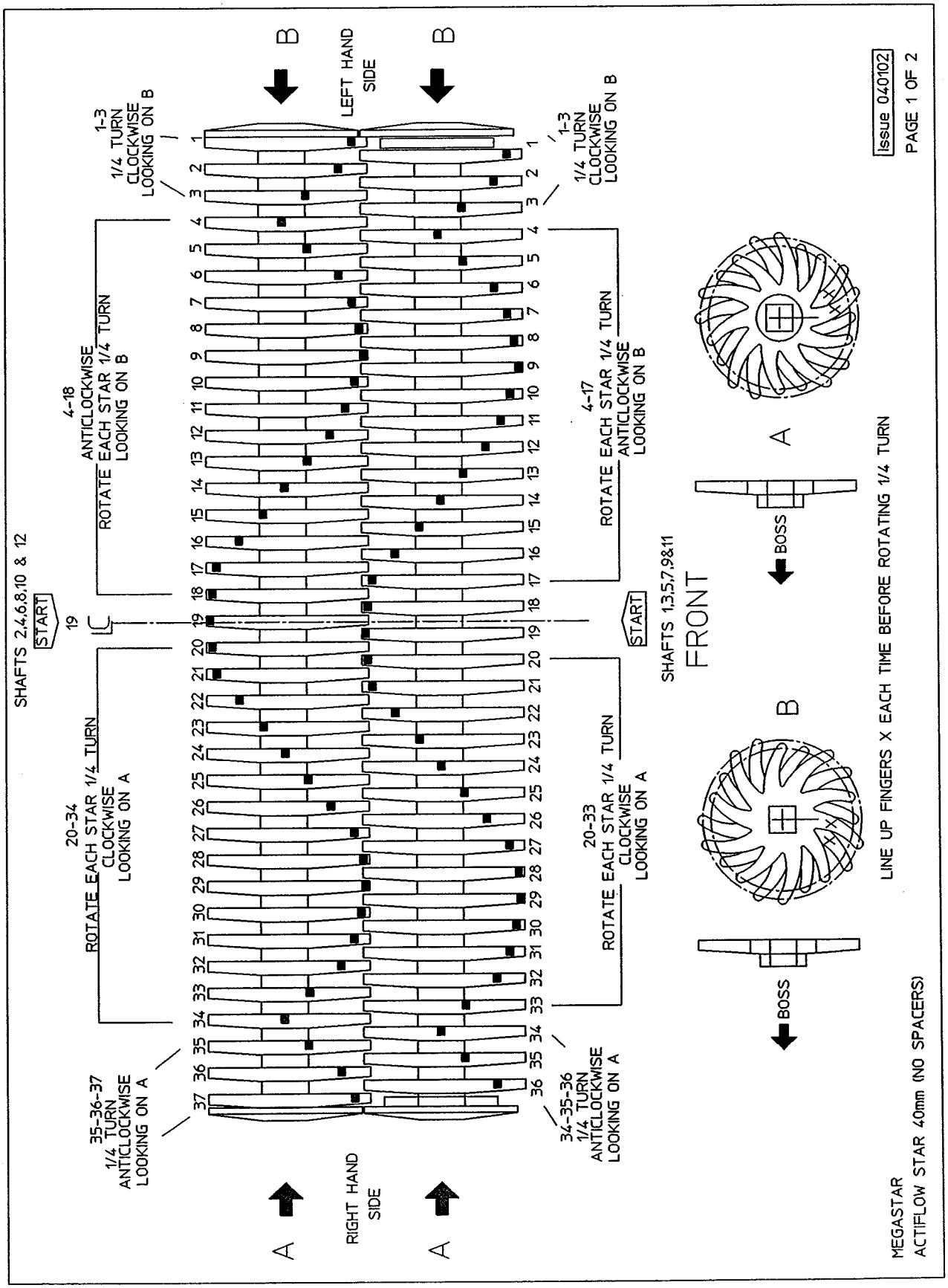
Your authorised Richard Pearsons Ltd. dealer will be pleased to discuss and give recommendations and assistance on the best set up to suit your requirements.

Star shafts are numbered 1 to 12 starting at the front of the machine. All 12 star shafts MUST have the same spacing on each shaft, as the stars overlap each other.

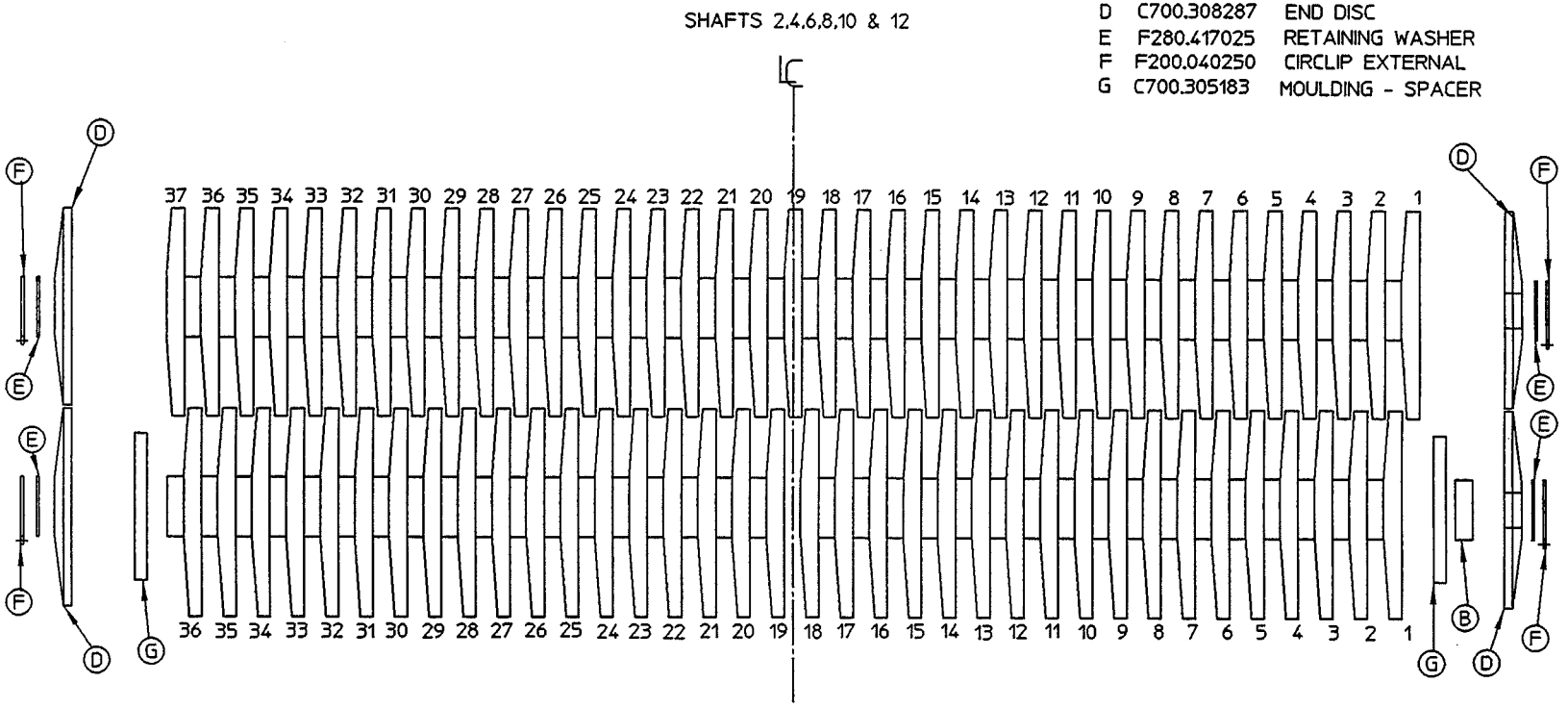
The following diagrams show the layout of different star spacing configurations. Special note needs to be taken when fitting the Actiflow stars so that the 'spiral' effect, caused by the alternate long fingers, follows around the complete star shaft correctly. Each layout has two drawings, the first drawing shows how the 'spiral' effect is achieved, and the second sheet shows the component parts for the make up of the particular configuration. The diagrams cover the range from: no spacers through to 4 spacer.

Page 7.12 sheet 1 of 0 spacers
Page 7.13 sheet 2 of 0 spacers
Page 7.14 sheet 1 of 1 spacers
Page 7.15 sheet 2 of 1 spacers
Page 7.16 sheet 1 of 2 spacers
Page 7.17 sheet 2 of 2 spacers
Page 7.18 sheet 1 of 3 spacers
Page 7.19 sheet 2 of 3 spacers
Page 7.20 sheet 1 of 4 spacers
Page 7.21 sheet 2 of 4 spacers

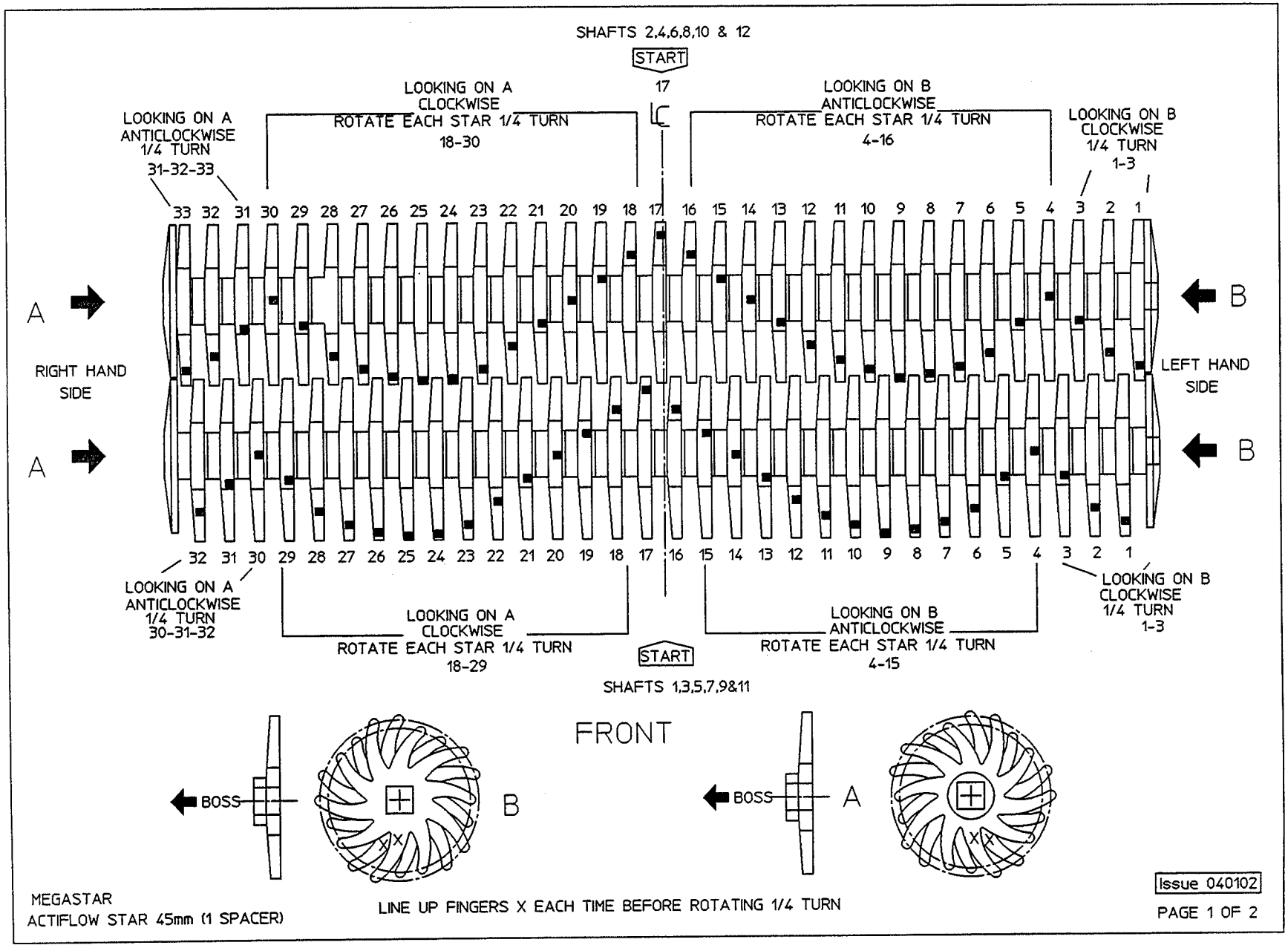
7.12 – OPERATING ADJUSTMENTS



STARS 1 - 36	C700.308283	STAR 5+5 FINGER 40mm WIDE
STAR 37	C700.308284	STAR 5+5 FINGER 20mm WIDE
B	C700.303217	SPACER 20mm
D	C700.308287	END DISC
E	F280.417025	RETAINING WASHER
F	F200.040250	CIRCLIP EXTERNAL
G	C700.305183	MOULDING - SPACER



MEGASTAR
ACTIFLOW STAR 40mm (NO SPACERS)

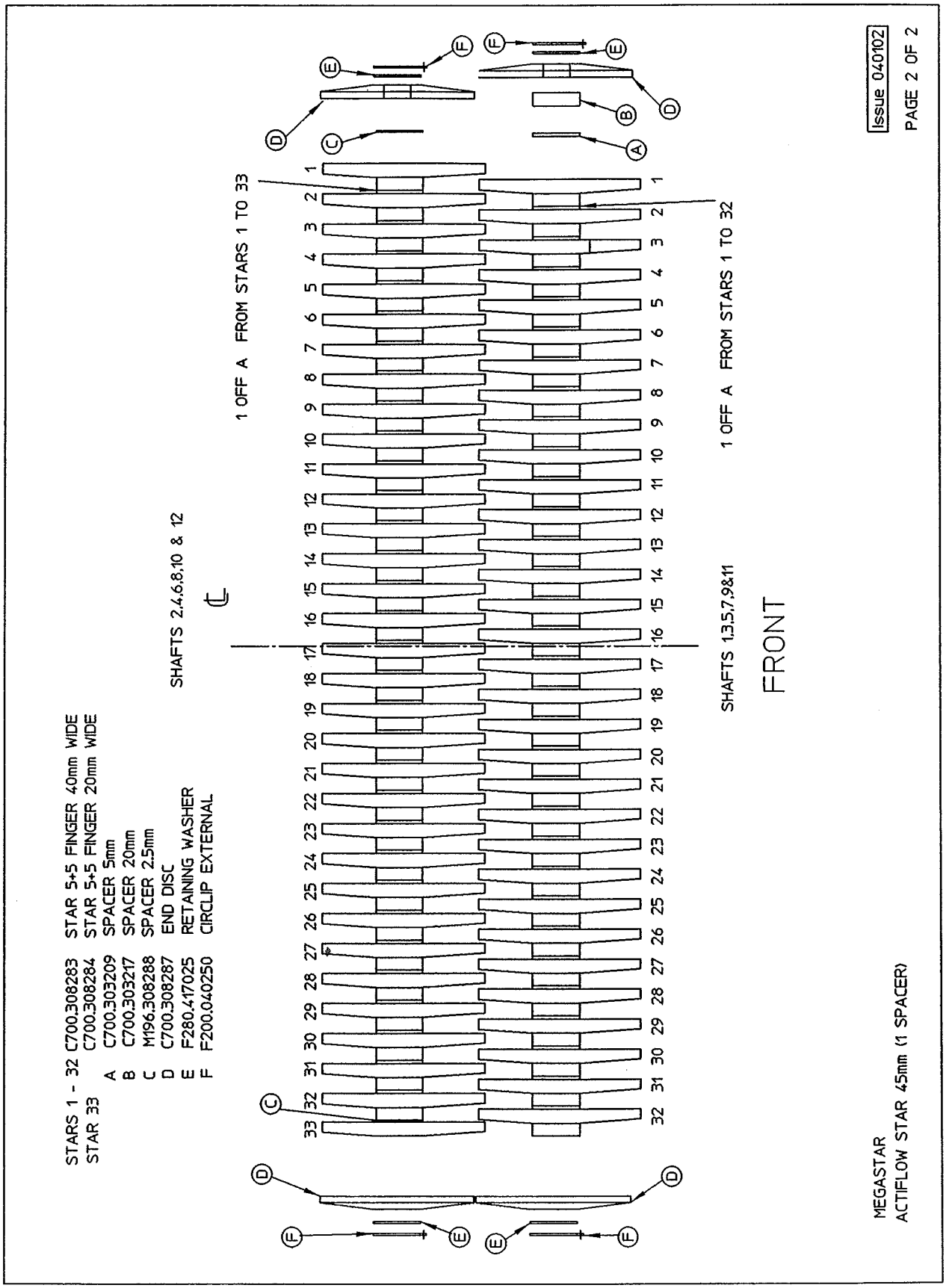


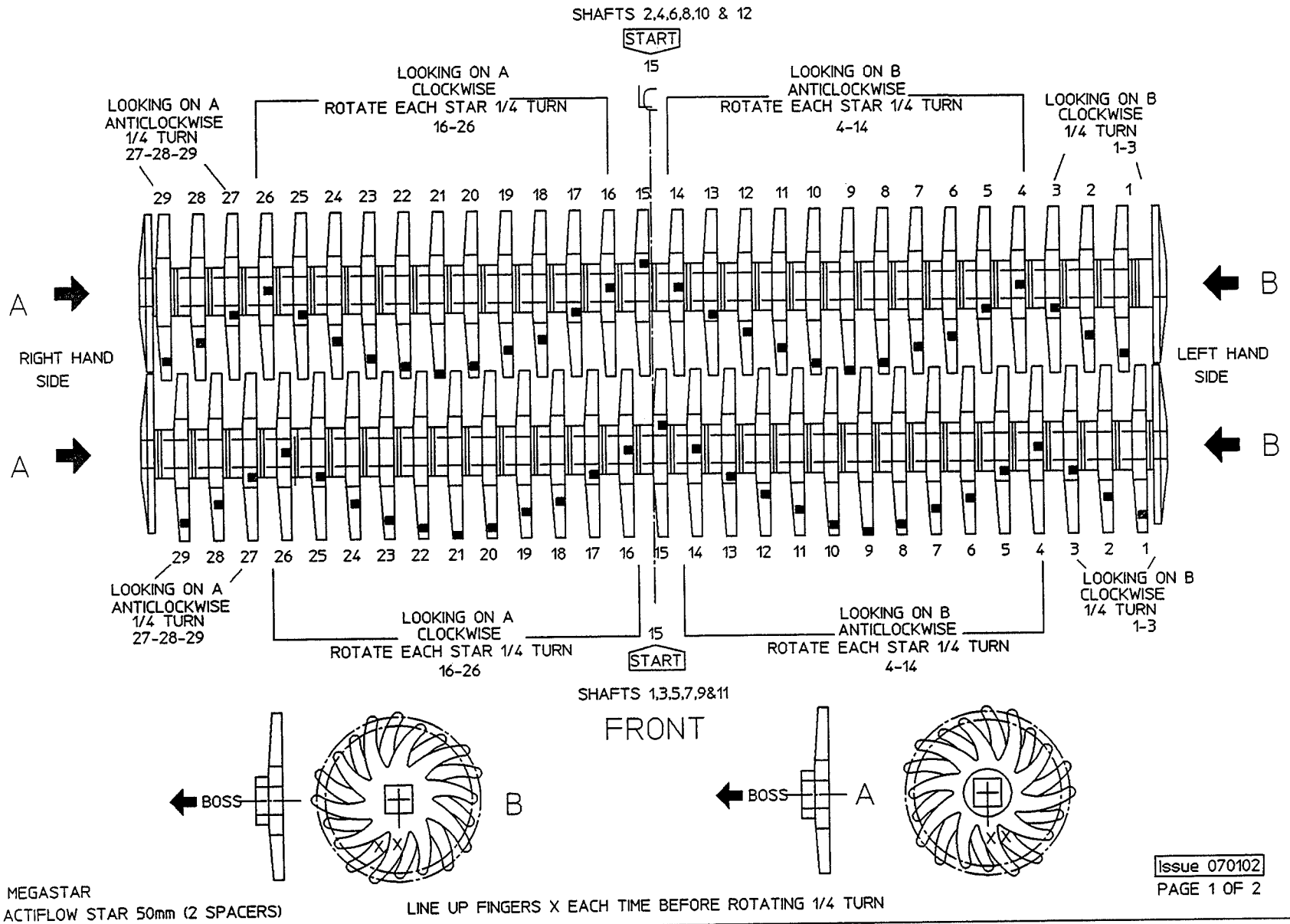
MEGASTAR
ACTIFLOW STAR 45mm (1 SPACER)

LINE UP FINGERS X EACH TIME BEFORE ROTATING 1/4 TURN

Issue 040102

7.15 – OPERATING ADJUSTMENTS

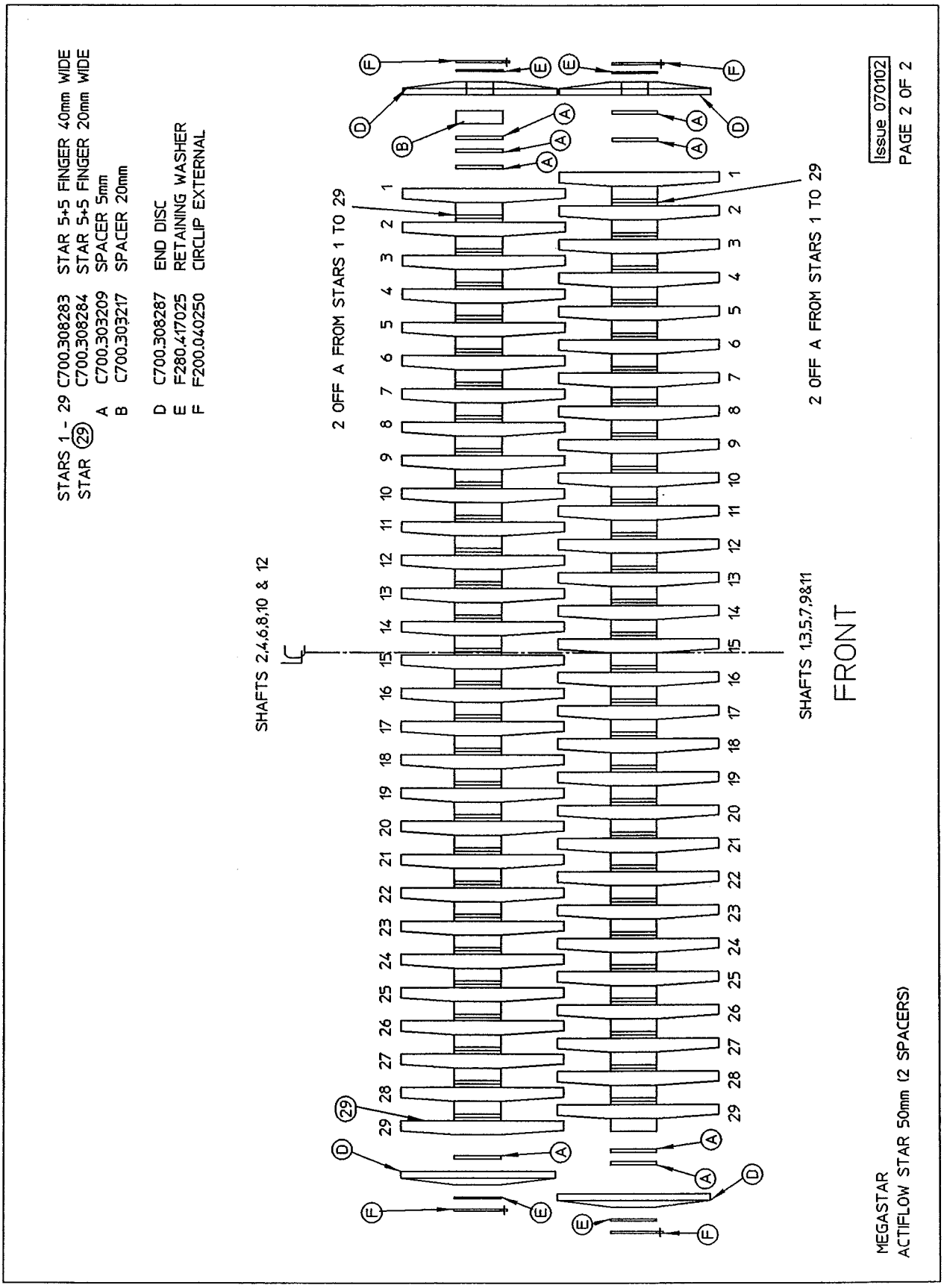


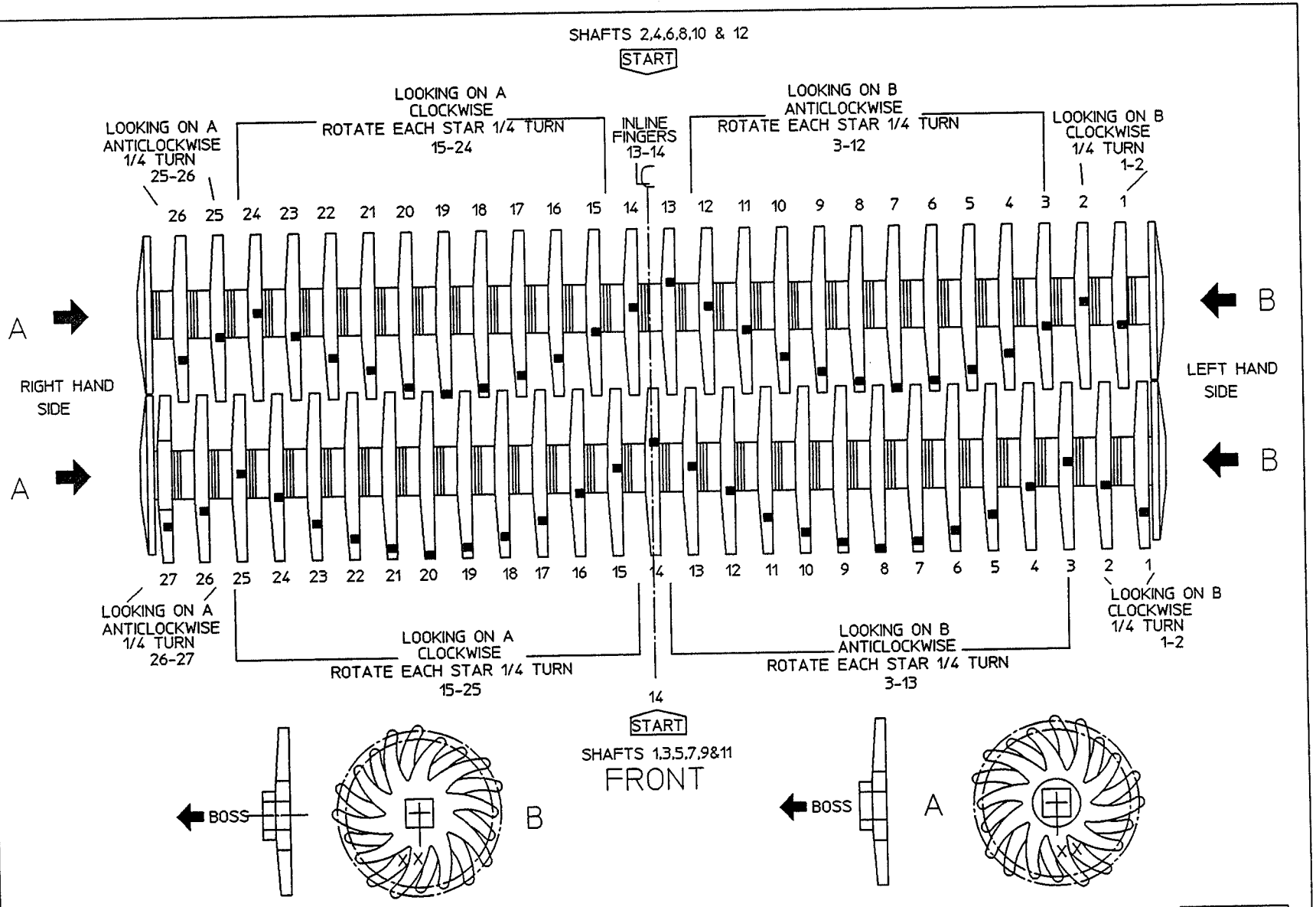


MEGASTAR
ACTIFLOW STAR 50mm (2 SPACERS)

LINE UP FINGERS X EACH TIME BEFORE ROTATING 1/4 TURN

7.17 – OPERATING ADJUSTMENTS



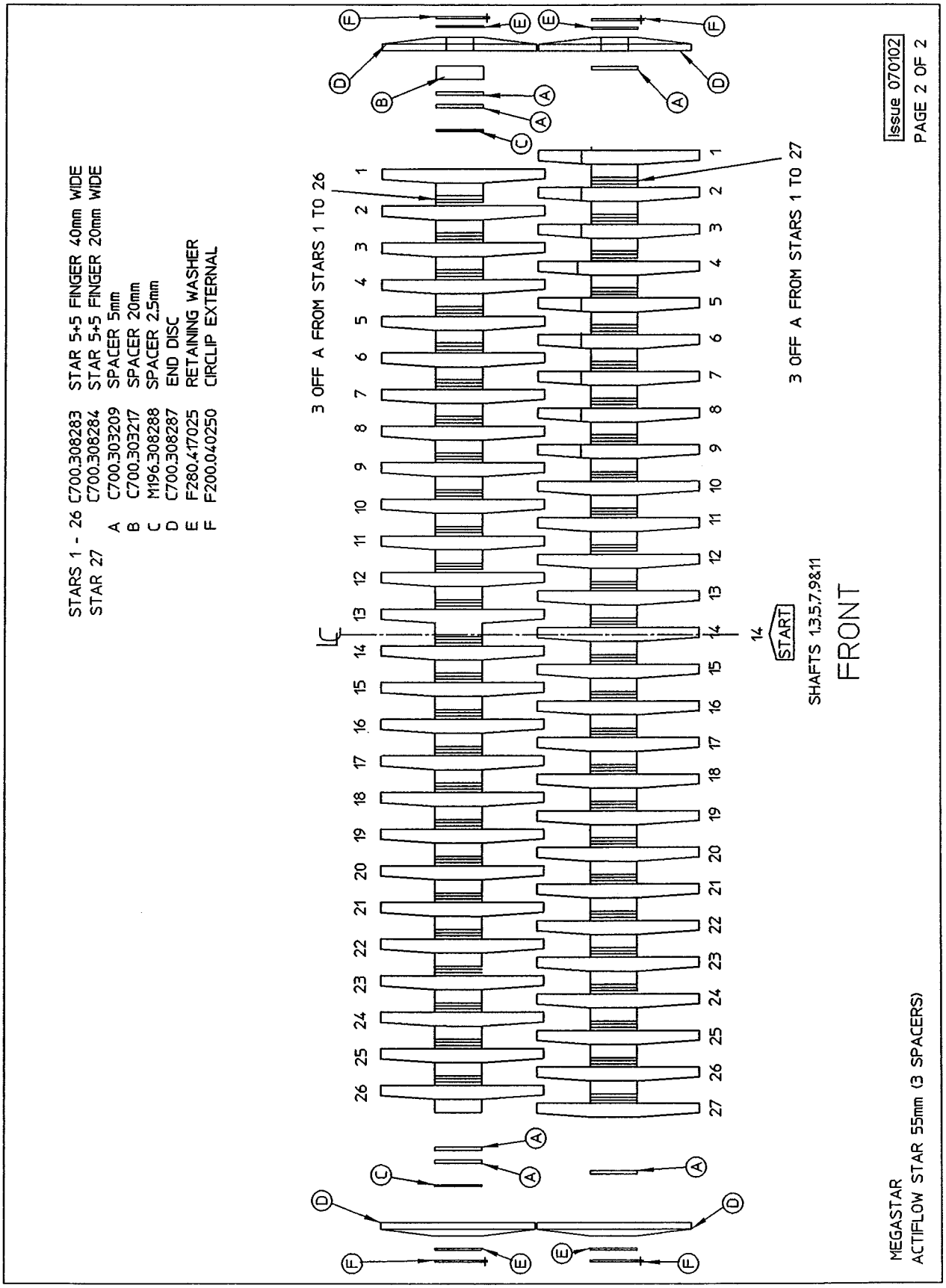


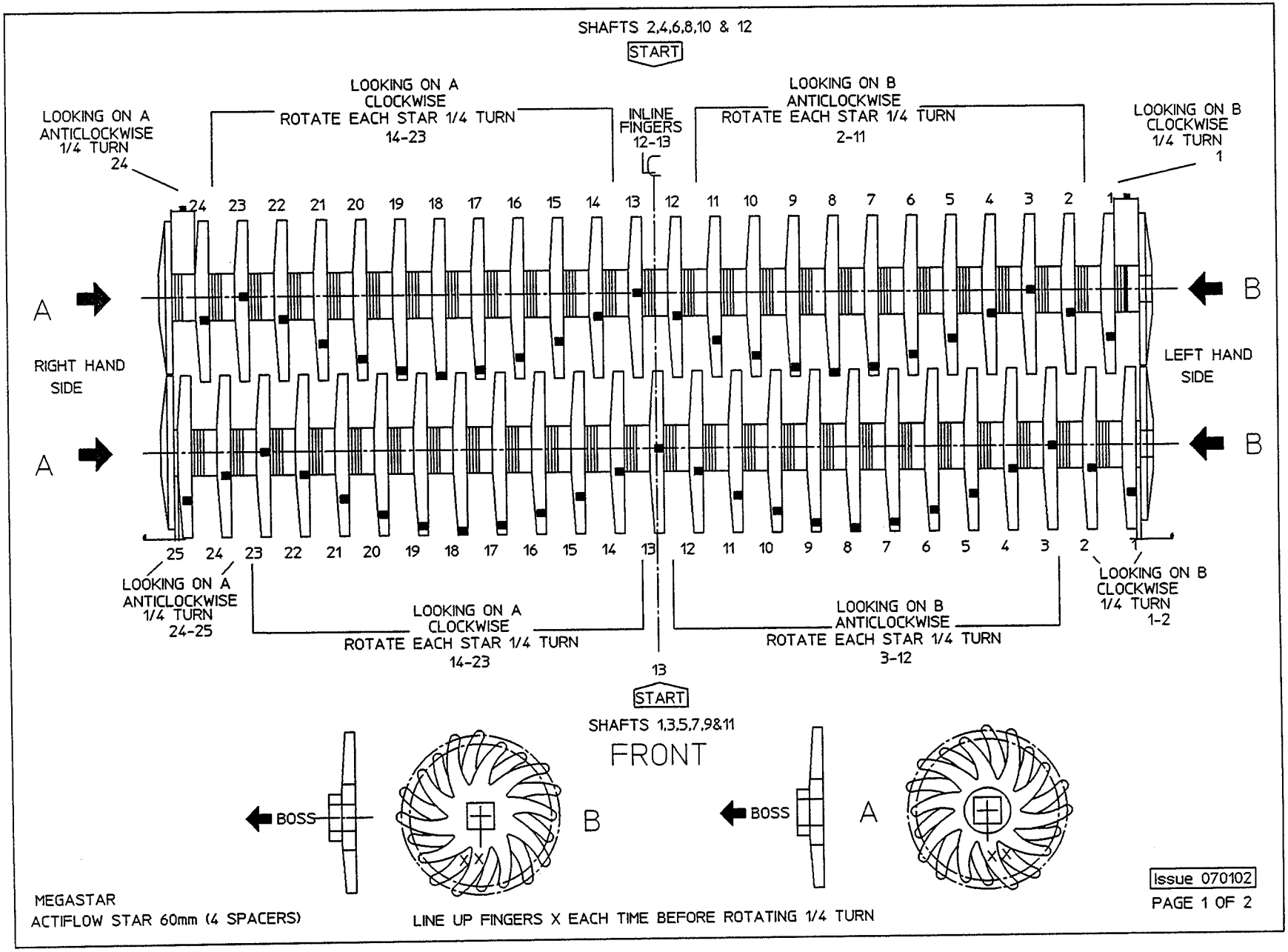
LINE UP FINGERS X EACH TIME BEFORE ROTATING 1/4 TURN

MEGASTAR
ACTIFLOW STAR 55mm (3 SPACERS)

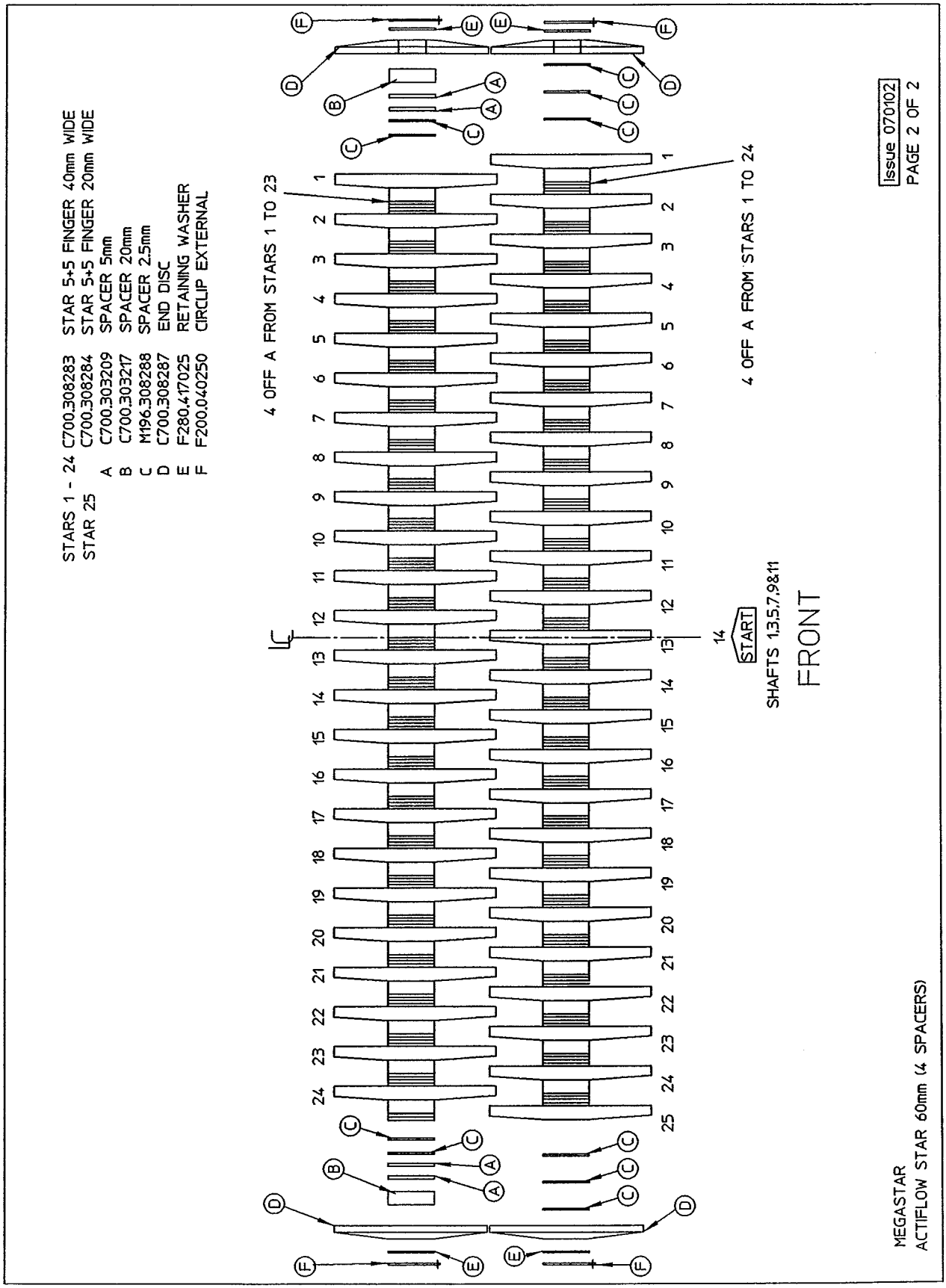
Issue 070102

7.19 – OPERATING ADJUSTMENTS




SHAFTS 2,4,6,8,10 & 12
START
LOOKING ON A ANTICLOCKWISE 1/4 TURN 24
LOOKING ON A CLOCKWISE ROTATE EACH STAR 1/4 TURN 14-23
INLINE FINGERS 12-13
LOOKING ON B ANTICLOCKWISE ROTATE EACH STAR 1/4 TURN 2-11
LOOKING ON B CLOCKWISE 1/4 TURN 1
24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
A
B
RIGHT HAND SIDE
LEFT HAND SIDE
A
B
25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
LOOKING ON A ANTICLOCKWISE 1/4 TURN 24-25
LOOKING ON A CLOCKWISE ROTATE EACH STAR 1/4 TURN 14-23
LOOKING ON B ANTICLOCKWISE ROTATE EACH STAR 1/4 TURN 3-12
LOOKING ON B CLOCKWISE 1/4 TURN 1-2
13
START
SHAFTS 1,3,5,7,9&11
FRONT
BOSS
B
BOSS
A
MEGASTAR
ACTIFLOW STAR 60mm (4 SPACERS)
LINE UP FINGERS X EACH TIME BEFORE ROTATING 1/4 TURN

7.21 – OPERATING ADJUSTMENTS



8.1 OPERATING YOUR MEGASTAR

This chapter offers help and advice on:

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

Operating speeds

The machine is designed to be operated at an input speed of 380 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 machine you will establish the best operating speed for your machine.

It is advantageous to achieve the maximum rate of work consistent with an adequate quality. Forward speed and machine turning speed are independent, and both are affected by the working conditions prevailing. However, choose a forward gear which will keep the machine full and then adjust the tractor engine speed. **IT IS IMPORTANT TO KEEP THE MACHINE FULL.**

When starting a new pass of the field, it is necessary to achieve the normal working speed as quickly as possible in order to get the machine full.

Starting off your machine

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.

Front end of machine is correctly set for the bed width being lifted.

Wheel settings are correct on both machine and tractor.

Transport lock on depth ram and cross conveyor are in the open, working positions.

Transport locks on level legs (if fitted) are in the open, working position.

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

Check for correct depth by digging into the formed bed and checking the depth of soil.

8.2 OPERATING YOUR MEGASTAR

Getting the best results from your machine

Advice and hints to help accomplish best performance and maximum output.

Tractor.

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

Ensure tyre widths are not too wide or they may crush the side of the ridges.

Ensure tractor drawbar pin is not too long or it may drag and bunch up soil and weed.

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

Megastar

Ensure jack stand is correctly stored on the machine, but ensure jack stand stays with the machine.

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

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.

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

Ensure the correct depth settings when moving to different fields or conditions.

As soon as your machine 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.

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

As soon as the machine 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.

8.3 OPERATING YOUR MEGASTAR

Ensure the correct width of diabolo is fitted to your machine for the correct width of your beds.

Do not apply too much pressure on the diabolo. As a result of too much pressure clods could be produced. Only enough pressure on the diabolo to keep it turning is necessary in most conditions.

Clod mats (if fitted) are adjustable for angle. This gives a restriction to the soil flow, to allow the stars more time to break up more of the clods. Ensure that the blocks are not over adjusted so that the flow of material through the blocks is restricted too much.

It is important that an even spread of material, across the width of the machine, is maintained to allow the area of stars to work to their maximum capacity.

If levelling legs are fitted it is important to maintain the attitude of the machine level, across the machine with the horizon so that an even spread of material, across the width of the machine, is maintained to allow the star area to work to their maximum capacity.

The correct cross conveyor speed is essential, the objective is to have the speed as slow as possible, but fast enough not to cause spillage over the top of the side panels.

Most Important

Ensure all bolt heads are fitted the correct way having no threads or nuts in the soil flow area.

It is most important that the tractor gives a constant 12v supply to the Megastar. 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 to eliminate back pressure.

Richard Pearson offers a service through its 'Tech centre' for assessments on your machine performance.

Trouble shooting hydraulics problems

See section 9.2 for general hydraulic maintenance. If it becomes necessary to carry out any repairs on the Megastar's 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.

8.4 OPERATING YOUR MEGASTAR

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. Place chocks to the front and rear of both wheels to prevent the machine from moving.

2. Lower the drawbar on to the drawbar stand 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.

3. With the levelling cylinders, transport lock valves in the open position, lower the machine to its lowest position. LEAVE THE TRANSPORT LOCK IN THE OPEN POSITION. (see section 2.7).

4. Switch off the tractor engine.

5. 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.

6. 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.

Tractor valve bank

Ensure that the hydraulic requirements, laid down in section 3, are correct. 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 are in the working position. (see sections 2.7 and 7.7). Secondly check that the problem is not an electrical problem. This is carried out by switching all electric's 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 engineer. Consult your authorised Richard Pearson Ltd. dealer for further assistance.

8.5 OPERATING YOUR MEGASTAR

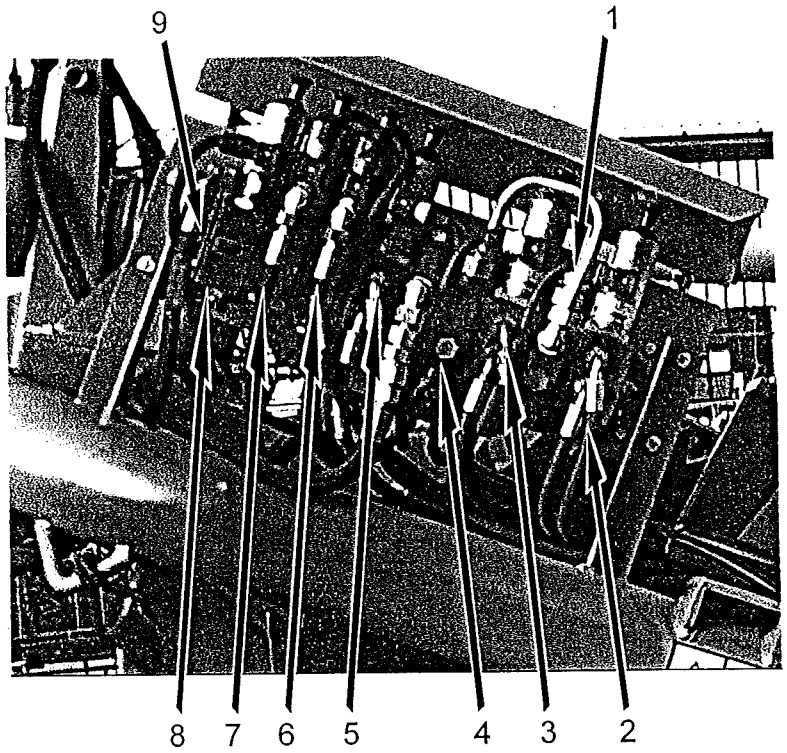


Fig 8.1

ITEM DESCRIPTION

1. Inlet section
2. Axle steering
3. Cross conveyor direction valve
4. Cross conveyor motor speed control
5. Cross conveyor traverse
6. Level leg R/H (if fitted)
7. Level leg L/H (if fitted)
8. Share depth
9. 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 tractors handbook or dealer for further information.

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

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.

8.6 OPERATING YOUR MEGASTAR

Trouble shooting electrical problems

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

If you suspect an electrical fault follow these simple steps to confirm. Switch all electrics off and operate the hydraulic valves manually, to prove their operations. If valve functions correctly the electrics may be at fault. Switch electrics on and operate the suspect function in both the manual and automatic (if appropriate), to see where 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 machine. Make sure that no contacts are bent or pushed back into their housing.

Check that the power cables are correctly connected to the tractor (see section 4) and that the tractor's alternator is functioning correctly.

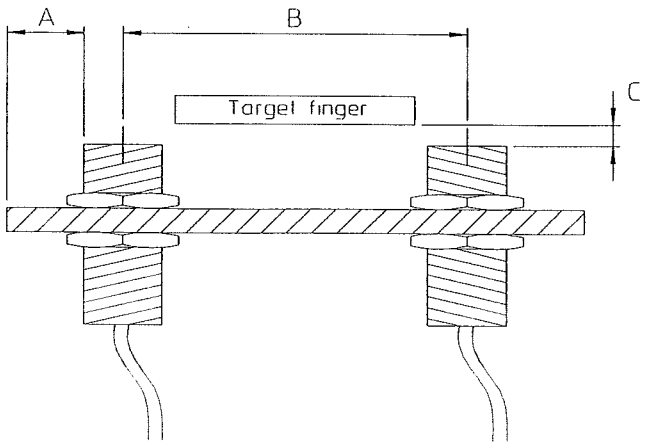
It is important to maintain a good 12 volt supply for the electrical circuits to work properly.

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

Adjusting depth sensors.

The depth control system of the Megastar works by a diabolo running on top of the bed. As the diabolo raises and falls following the contours of the ridge, it 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 machine. Fig 8.2 item 1 shows the proximity switches mounted in their mounting brackets.

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



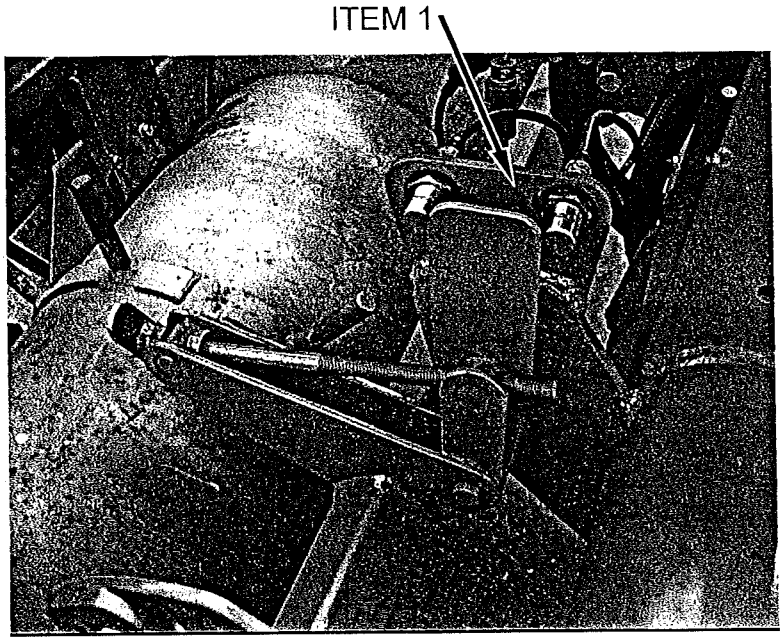


Fig 8.2

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 driver's control box. The green light on the rear of the proximity switches should illuminate and remain so whilst the service is switched 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.

8.8 OPERATING YOUR MEGASTAR

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 driver's 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 machine, next to the input PTO. Make sure that no contacts are bent or pushed back in to their respective housings.

If after checking the position and operation of the sensors, the share operation is still incorrect, remove the cover from the electrical box mounted behind the tractor valve bank situated on the front left hand side of the machine (Fig 8.3 item 1).

Too much oil flow from the tractor can affect the movement of the depth cylinder resulting in an uneven depth.

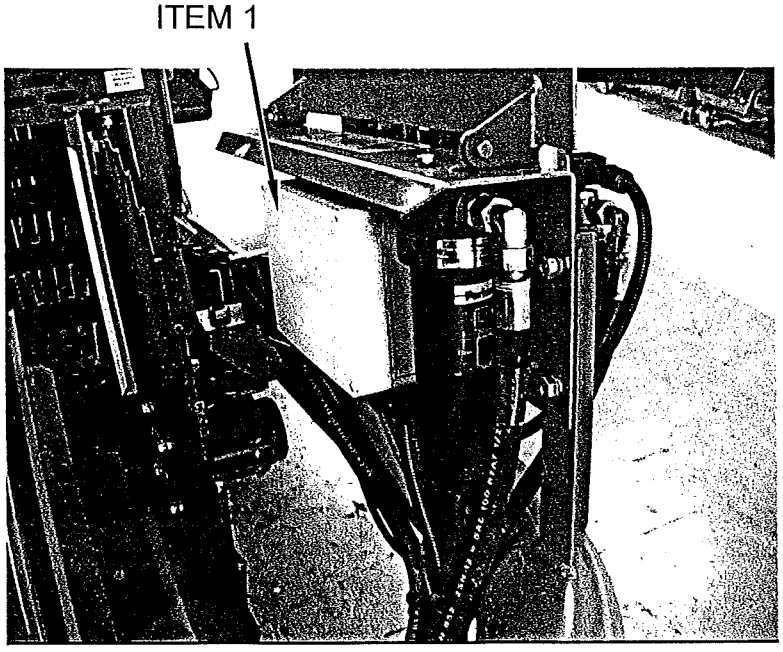


Fig 8.3

8.9 OPERATING YOUR MEGASTAR

Inside the box mounted on the lid is a row of 2 timer relays. (Fig 8.4 item1).

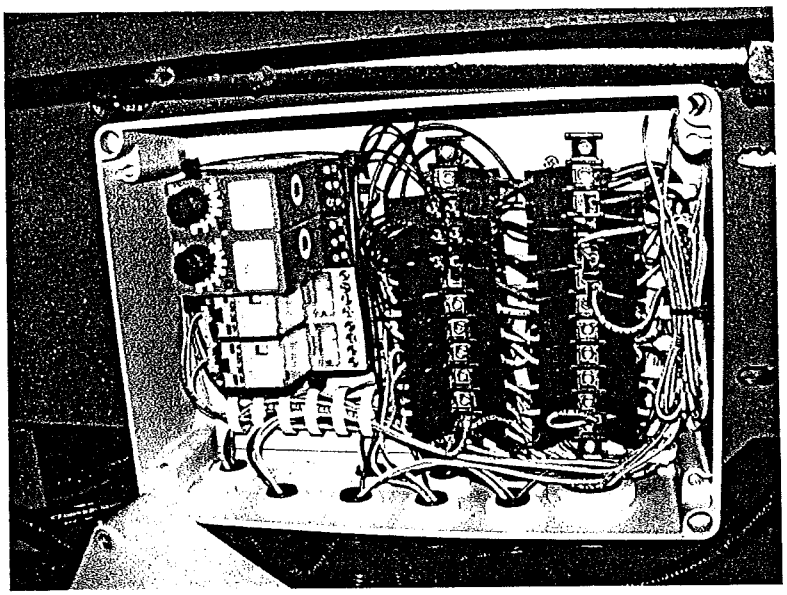


Fig 8.4

The timers are normally an orange colour and each have a timer adjuster dial and an indicator light. (Fig 8.5). 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.

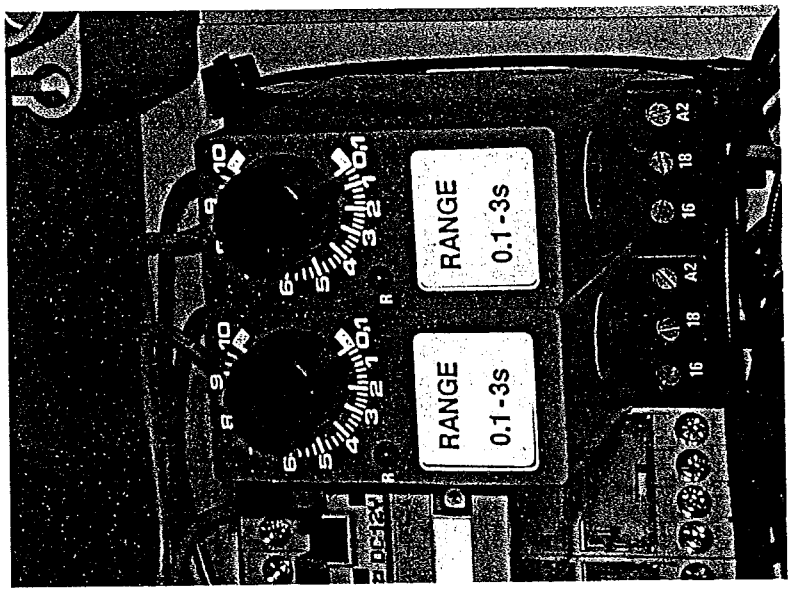


Fig 8.5

8.10 OPERATING YOUR MEGASTAR

Check the output of the timer relays by repeating the proximity sensor operation test described on page 8.7, but observe the red lights on the timer relays.

Commence by triggering the up sensor, this should illuminate timer relay T1. The down sensor, should illuminate timer relay T2. If any of the 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 8.6).

Trigger each timer relay in turn, and check for an output of 12 volts at point 18 (Fig 8.6) 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 8.6) is well made and that there is continuity.

Having carried out these checks and adjustments, if any of the timer relays are 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.

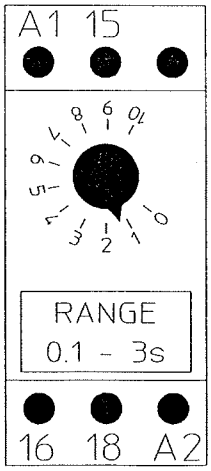


Fig 8.6

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.

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 driver's control box is operated (section 4), an automatic circuit is engaged. 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. Check that proximity switch lights are working correctly (see page 8.7). 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 behind the tractor valve bank situated on the front left hand side of the machine. (Fig 8.3).

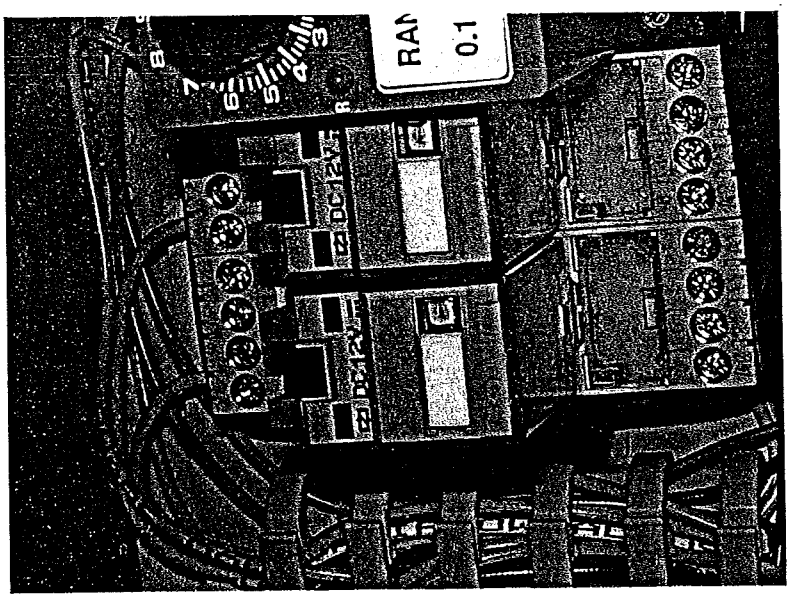


Fig 8.7

Inside the box mounted on the lid is a row of 2 relays, which are transparent. (Fig 8.7), and are relays for the steering self centring. Items 1 and 2

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 8.7, but observe the relays. By triggering the proximity switches the relays should be seen to be latching in place, if ether does not then replace with new.

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

Figure 8.8 shows the wiring layouts for a machine with hydraulic drawbar, and figure 8.9 shows the wiring layouts for standard machine.

See machine parts book for further information of hydraulic and electrical areas.

8.13 OPERATING YOUR MEGASTAR

MEGASTAR WIRING LOOM - INC HYD DRAWBAR

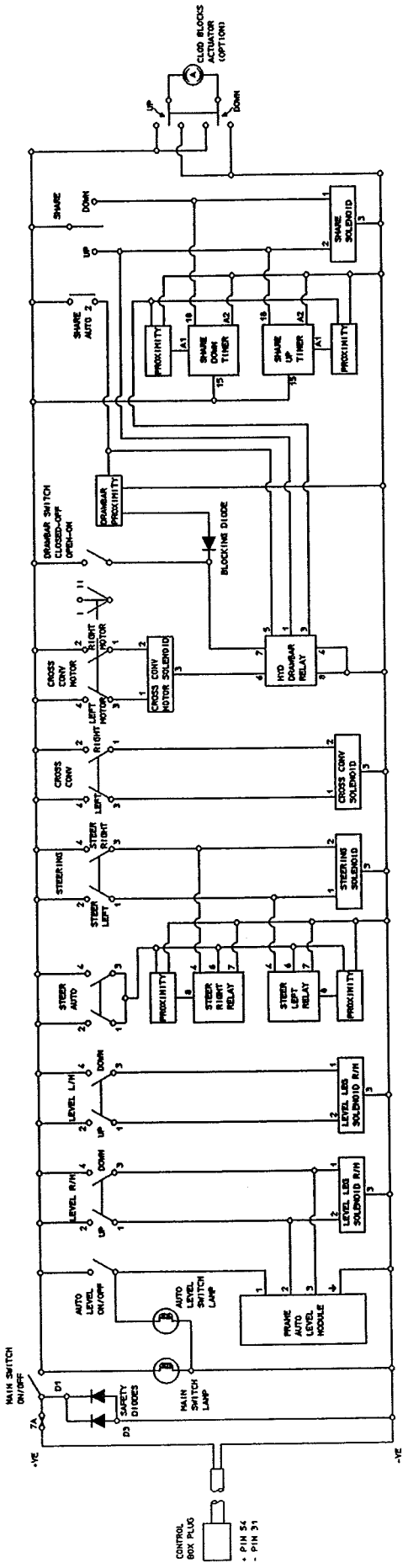


Fig 8.8

8.14 OPERATING YOUR MEGASTAR

MEGASTAR WIRING LOOM

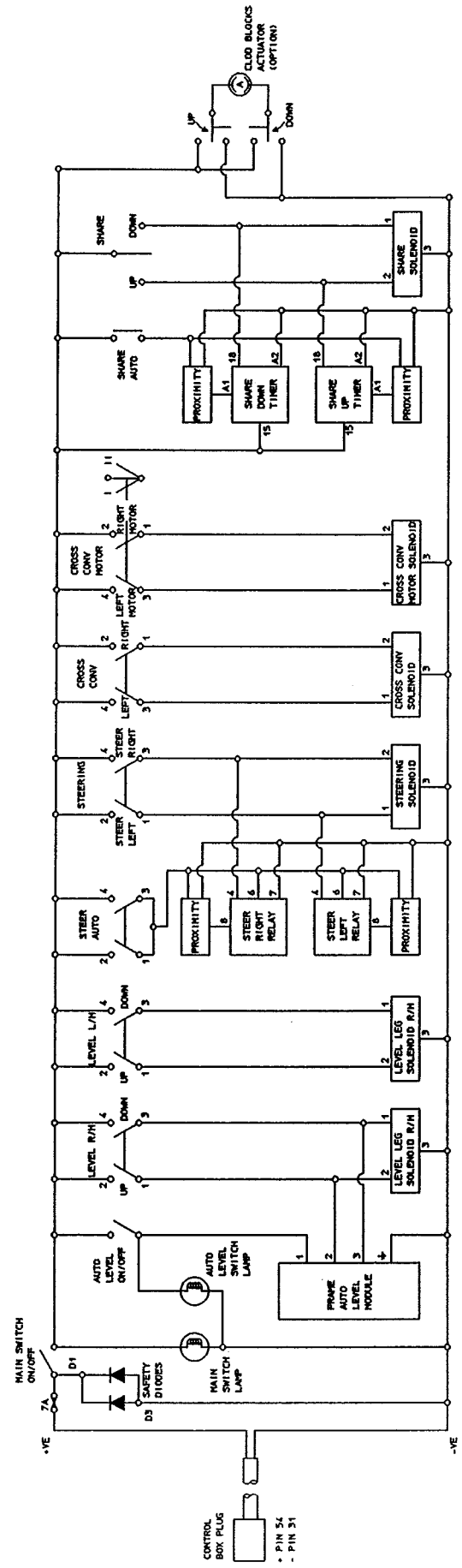


Fig 8.9

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 machine.

Lubrication

Regular lubrications is an integral part of looking after your machine. The schedule of maintenance outlined 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 advisable 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 accelerated wear. If the seals are damaged the more frequent greasing will have to be carried out to prevent the bearing from failing.

The gearbox, mounted on the bridge in the centre of the machine, should be regularly visually examined for any signs of leaks and checked for oil level, and if necessary topped up. The gearbox uses BP EP HYPO ENERGEAR 85W/140.

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 ENERGEAR 85W/140
		(Gearbox capacity 2.75 Ltrs)	

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 and 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 8.4). 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 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 machine's hydraulics. Ensure that the tractor hydraulic system is serviced in accordance with the manufacturer's recommendations to prevent any contamination of the machine's system. 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 tractor's reservoir.

Mounted on the front of the machine in the supply line from the tractor is a pressure filter to protect the machine's 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.

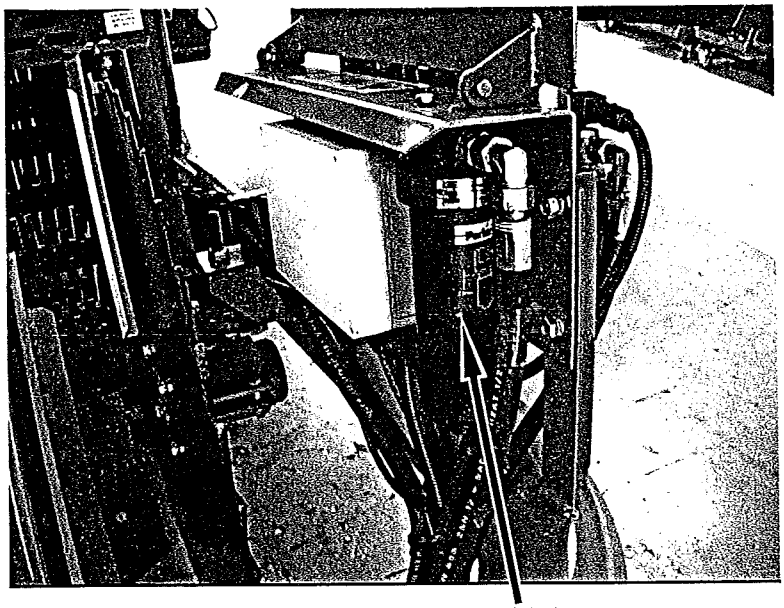


Fig 9.1

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

9.4 – ROUTINE MAINTENANCE

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.

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.

7. Carry out lubrication

8. Grease axle king pins

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 gearbox, if necessary top up with gear oil.

9.5 – ROUTINE MAINTENANCE

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 cross conveyor web for any damage or wear and repair or replace as necessary.

3. Check stars 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.**

Out of season storage procedure

The machine 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 8.4), 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.

PTO maintenance

IMPORTANT. To ensure the efficient operation of the PTO shafts, it is vital to grease the sliding section on a daily basis. Failure to do this will result in early failure of the PTO shafts.

The PTO shaft should be disconnected from the tractor and the two halves pulled completely apart. Each half should be examined for any indication of tightness or binding when they are in operation and corrected as necessary. The inside of the outer tube and the inside of the inner tube should be liberally coated with grease, see recommended lubricants page 9.1, and the two halves pushed back together. Wipe off any excess grease around the guards. Slide the two halves in and out several times to ensure that they slide easily and that the grease has spread around the shaft tubes. Refit to tractor, see page 5.3.

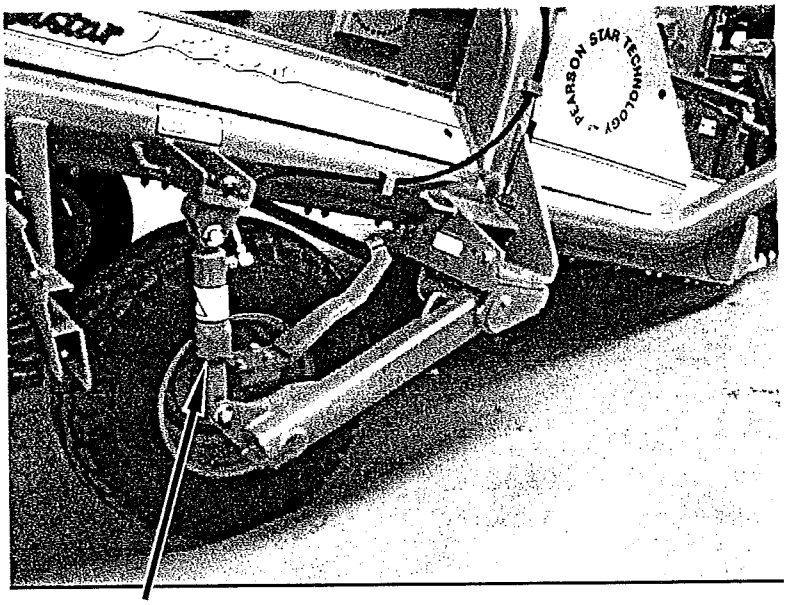
10.1 - OPTIONS

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

Hydraulic levelling

A manual hydraulic levelling system may be fitted. This consists of a hydraulic cylinder, fitted to each pivoting axle (Fig 10.1 item 1), controlled by switches in the driver's control box (section 4). When the hydraulic levelling system is fitted it enables the driver to adjust the height and level of the machine.

If both cylinders are operated together, then the rear of the machine will raise or lower. This can help to counteract the effect of working up or down slopes. If the cylinders are operated individually then the machine can be levelled from side to side.



ITEM 1

Fig 10.1

Automatic axle levelling

It is possible to have the axle levelling cylinders controlled by an optional electronic device, which will give automatic lateral levelling control. The unit is mounted onto a plate on the front of the chassis, on the side of the PTO tower plate. 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 legs, when the switch is on full auto control is engaged.

IT IS IMPORTANT THAT WHEN ON HEADLANDS, LEVELLING MUST ALWAYS BE LOWERED BEFORE ATTEMPTING ANY TURNING OR REVERSING MANOEUVRES. FAILURE TO DO SO MAY CAUSE DAMAGE TO THE AXLE AND STEERING COMPONENTS.

10.2 - OPTIONS

Variflow

The Variflow consists of a hydraulically driven web mounted on top of the star bed. It is added to help the flow of material up the star bed providing a smoother flow of soil and stones in conditions such as steep slopes Fig 10.2.

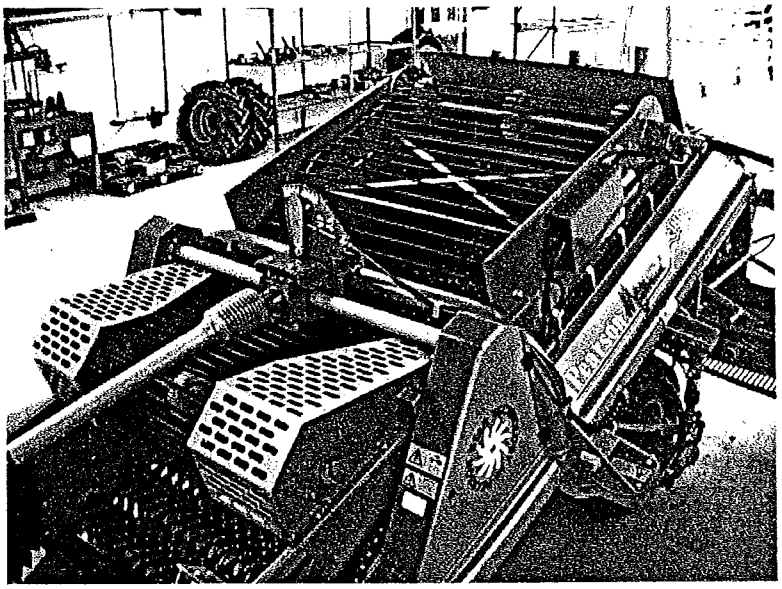


Fig 10.2

The drive speed can be varied to suit conditions. As standard the Variflow comes with a manual speed control, as an additional option, remote speed control from the driver's control box is available Fig 10.3 shows the speed control valve fitted with the remote speed control, this is also the position for the manual control knob. Turning the knob to a higher number increases the speed, similarly turning the knob to a lower number reduces the speed.

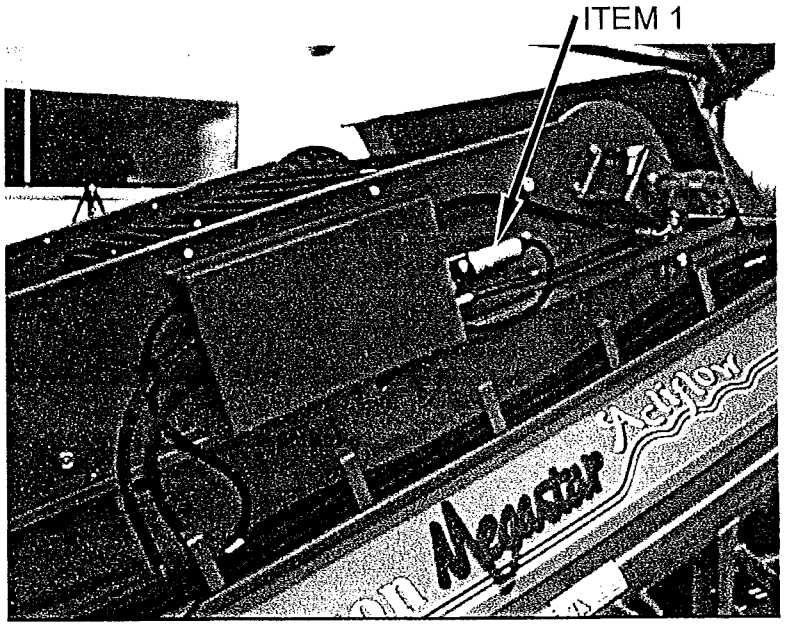


Fig 10.3

In hilly conditions the Variweb will help the waste material over the back of the star bed, so that the unwanted material is not pulled through the stars because all the useful soil has been extracted. Be aware of the speed of the Variweb because too great a speed may carry soil over the back of the machine, whilst too slow a speed is likely to cause a soil build up on the front stars.

By controlling the speed of the web it is possible on cloddy land to run the web slightly slower than the flow to help break up more of the clod.

See section 4 for remote controls of the Variweb.

Boulder box

Where many large stones or boulders are encountered, it may be advisable to remove these from the field rather than leave them in the trenches between the formed beds. In these conditions the Boulder box attachment is recommended Fig 10.4.

This attachment consists of two extra rows of widely spaced six finger stars and a single row of 10 finger stars, mounted above the cross conveyor. The two rows of widely spaced six finger stars allow normal material to fall through onto the cross conveyor while large stones or boulders are transported over the extra star shafts and deposited in to the boulder box mounted across the rear of the machine. When at a convenient point, the boulder box may be emptied

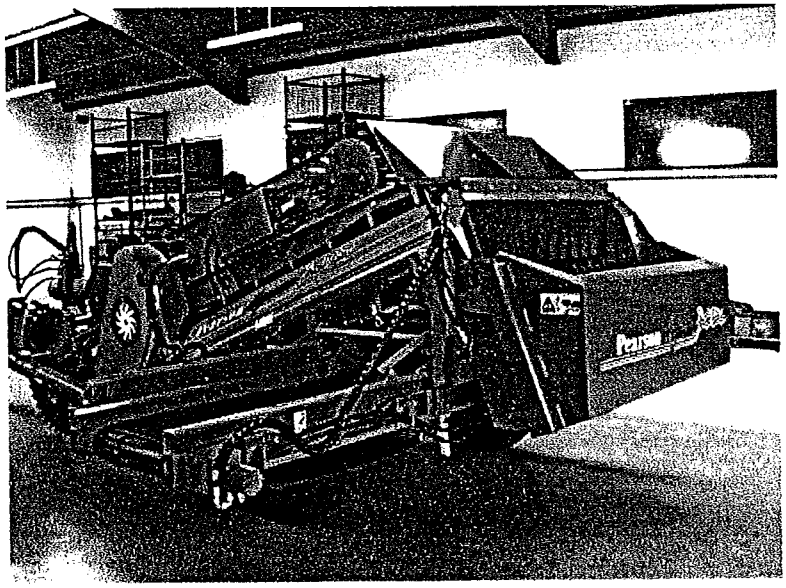
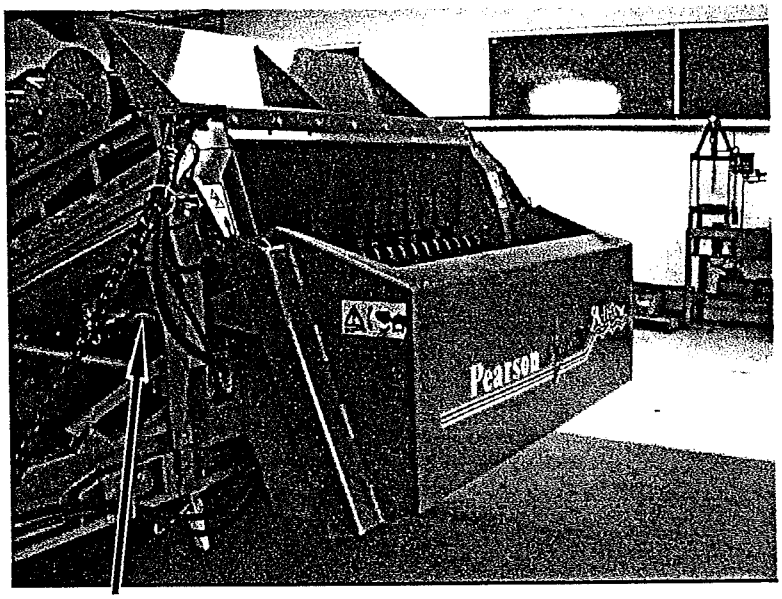


Fig 10.4

Two hydraulic cylinders operate the boulder box pivot mechanism for emptying (Fig 10.5 item 1). These are connected, via quick release couplings to an

external service port on the tractor and operated by one of the tractor levers. Ensure that this service is set so that it does not interfere with the normal hydraulic supply to the machine. for information and detail of consult tractor's hand book or dealer.



ITEM 1

Fig 10.5

Clod mat

A row of heavy duty rubber blocks mounted on a pivoting rail, suspended over the stars. The blocks can hold down clods onto the stars to assist the crumbling effect (Fig 10.6).

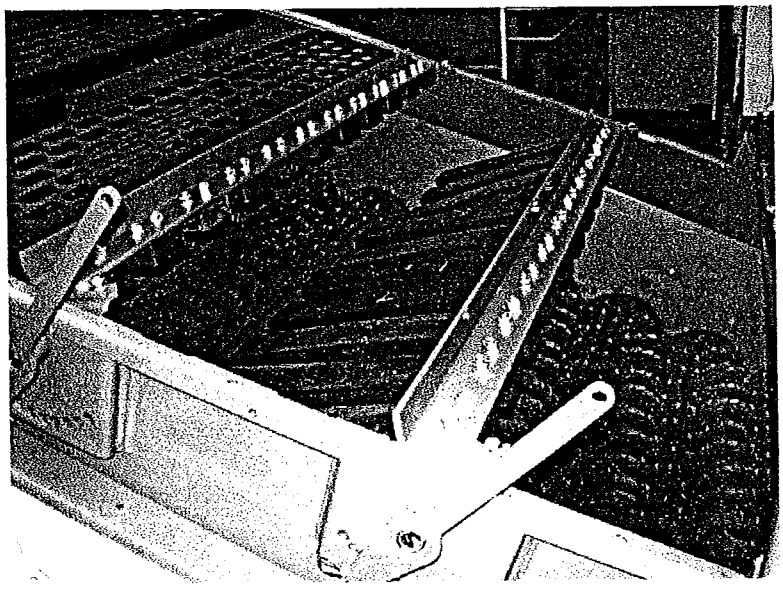


Fig 10.6

10.5 - OPTIONS

There are two mounting positions, and a single assembly can be mounted in either position, or two assemblies can be fitted. The blocks can be adjusted for angle, in relationship to the stars by means of a quadrant plate fix to the end of the rail (Fig 10.7).

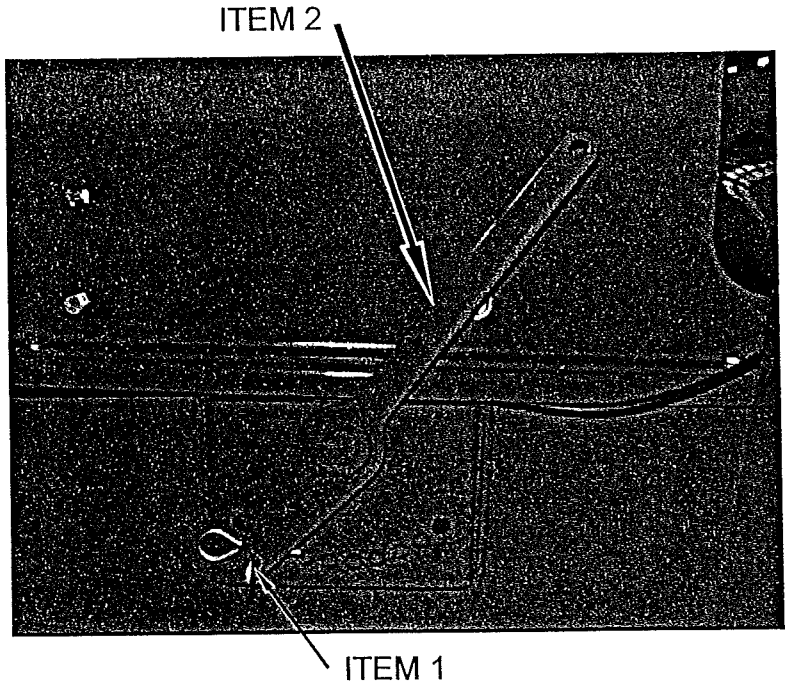


Fig 10.7

Adjustment is made by removing the retaining pin (Fig 10.7 item 1) from the quadrant and rotating the assembly to the required position using the handle fixed to the rail (Fig 10.7 item 2). Refit the pin in the appropriate hole in the quadrant plate.

The proximity of the blocks to the stars is dependant on the working conditions at the time. Be careful, If they are too low the flow may be unnecessarily restricted and output may be reduced.

Clod mat electric actuator

An electric actuator may be fitted to the clod mat assembly to allow angular adjustments to be made from within the driver's cab. The actuator is controlled by means of an additional switch fitted in the driver's control box. When two clod mats are fitted to the machine they are linked together by a rod, allowing simultaneous adjustment of both rows. The angle of one set of clod mats in relation to the other may be adjusted by moving the link rod fixing along a series of holes. (Fig 10.8)

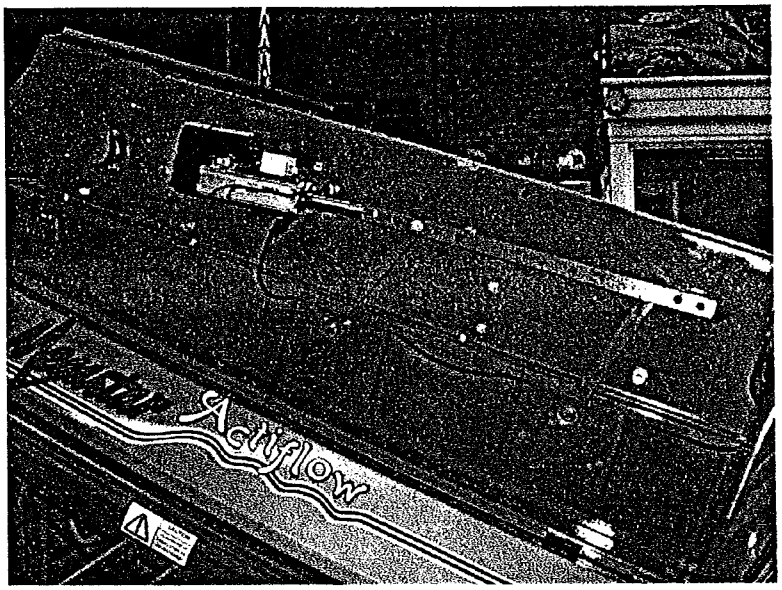


Fig 10.8

Hydraulic drawbar

The hydraulically damped drawbar and auto share lift may be fitted as an operational aid where buried outcrops of rock are likely to be encountered.

The system consists of a hydraulic cylinder mounted within the drawbar and pressurised, via an accumulator, by the Megastar's hydraulic system. (Fig 10.9)

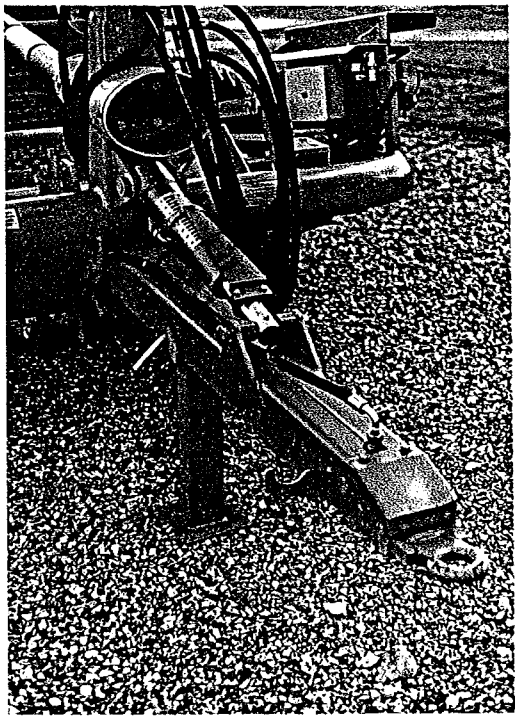


Fig 10.9

10.7 - OPTIONS

The design allows a maximum 200 mm movement within the drawbar, but after an initial movement of approximately 25 mm a proximity switch is activated which lifts the share out of the ground and thus over the obstacle. When the share control is used in the auto position, as the obstacle is passed the drawbar retracts and the share is lowered back in to work. When the share control is used in the manual position, then the share must be lowered back in to the working position using the share control switch.

An on/off switch is added to the driver's control box to override the auto share lift facility, if at any time this is not required

To make the drawbar system operate the Megastar must be connected to the tractor. With the tractor engine running, open the lock valve situated at the front of the hydraulic valve bank mounted on the front left hand side of the machine (Fig 10.10 item 1), and operate the share lift control.

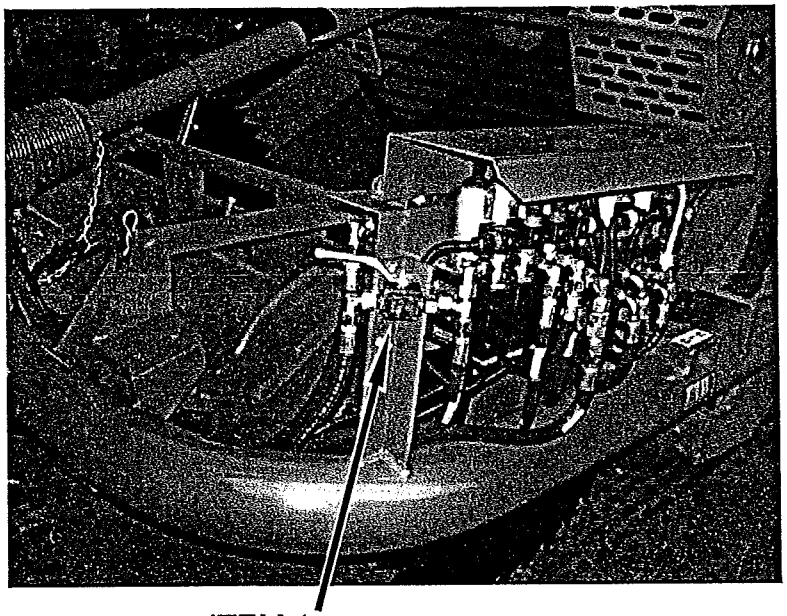


Fig 10.10

10.8 - OPTIONS

Closely watch the pressure gauge fitted on to the hydraulic accumulator (Fig 10.11 item 1), which is mounted above the PTO input drive at the front of the machine. When the pressure reaches 65 bar IMMEDIATELY close the lock valve on the hydraulic valve bank. The drawbar is now pressurised and operational.

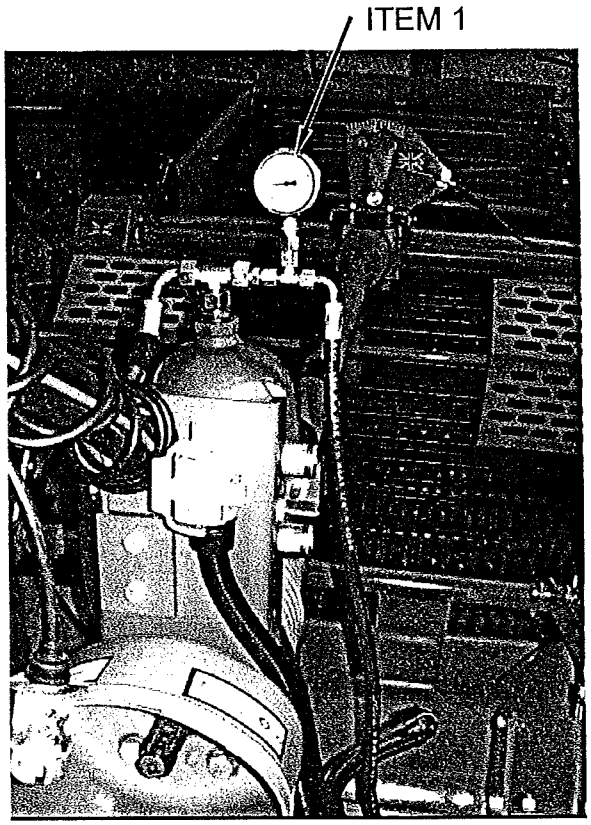


Fig 10.11

If in work, due to differing soil condition, this initial settings of 65 bar is too low and the drawbar is extending in normal work, increase the setting by increments of 10 bar until the drawbar is static. **DO NOT EXCEED 120 bar.**

If the drawbar is not functioning correctly when a system pressure of 120 bar is reached, then you must consult an officially appointed Richard Pearson dealer or the manufacture for further advice.

Although the auto share lift is an optional usage feature, the drawbar **MUST ALWAYS** be pressurised before commencing work.

IMPORTANT, DO NOT carry out any maintenance on, or leave the machine after work, with the drawbar hydraulic circuit pressurised. Stop the tractor engine, leaving the hydraulic flow and return pipes connected, open the lock valve at the front of the hydraulic valve bank and carry out the hydraulic residual pressure dump procedure (see section 8.4)

10.9 - OPTIONS

Diabolo manual depth control

In place of the automatic depth control system there is a manual depth control, which consists of a turn buckle mounted between a fixed point on the chassis and the diabolo frame. By adjusting the length of the turn buckle this will effect the digging depth of the share.

Shares

A variety of shares and share frames are available for different conditions. Consult your officially appointed Richard Pearson dealer for more information.

Steel braced tyres

Steel braced 275/65r18 x 10 ply tyres are available.

Plain discs

Plain edge disc are available as an option to replace the serrated ones fitted as standard.

Steel end discs

On each of the star shafts steel end discs may be fitted in lieu of the plastic one fitted as standard.

11.1 - OPTIONS

Product range

Accompanying this operators manual is a set of Richard Pearsons Ltd leaflets showing the full range of machinery available. If you require any information on any of these products contact your appointed Richard Pearsons dealer.