

Standen



STATUS

Two Row Potato Harvester

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

Tel: 01353 661111

www.standen.co.uk

Fax: 01353 662370

IMPORTANT

- This operators handbook should be regarded as part of the machine. Suppliers of both new and second-hand machines are advised to retain documentary evidence that this handbook was supplied along with the machine.
- On installation of the machine (i.e. starting off in the field), the New Machine Installation Record Card should be completed by the dealer/distributor and be countersigned by the customer. The document is proof that the correct procedures have been followed.
- The New Machine Installation Record Card should be returned to Standen Engineering Limited within 7 days of installation. Failure to do so may invalidate the machine warranty.

On delivery, check that the machine is as ordered and has not been damaged in transit. Please report any shortfall to your Standen dealer.

The contents of this handbook, although correct at the time of publication, may be subject to alteration by the manufacturers without prior notice.

Standen Engineering Limited operate a policy of continual product development. Therefore, some illustrations and/or text within this publication may differ from your machine.

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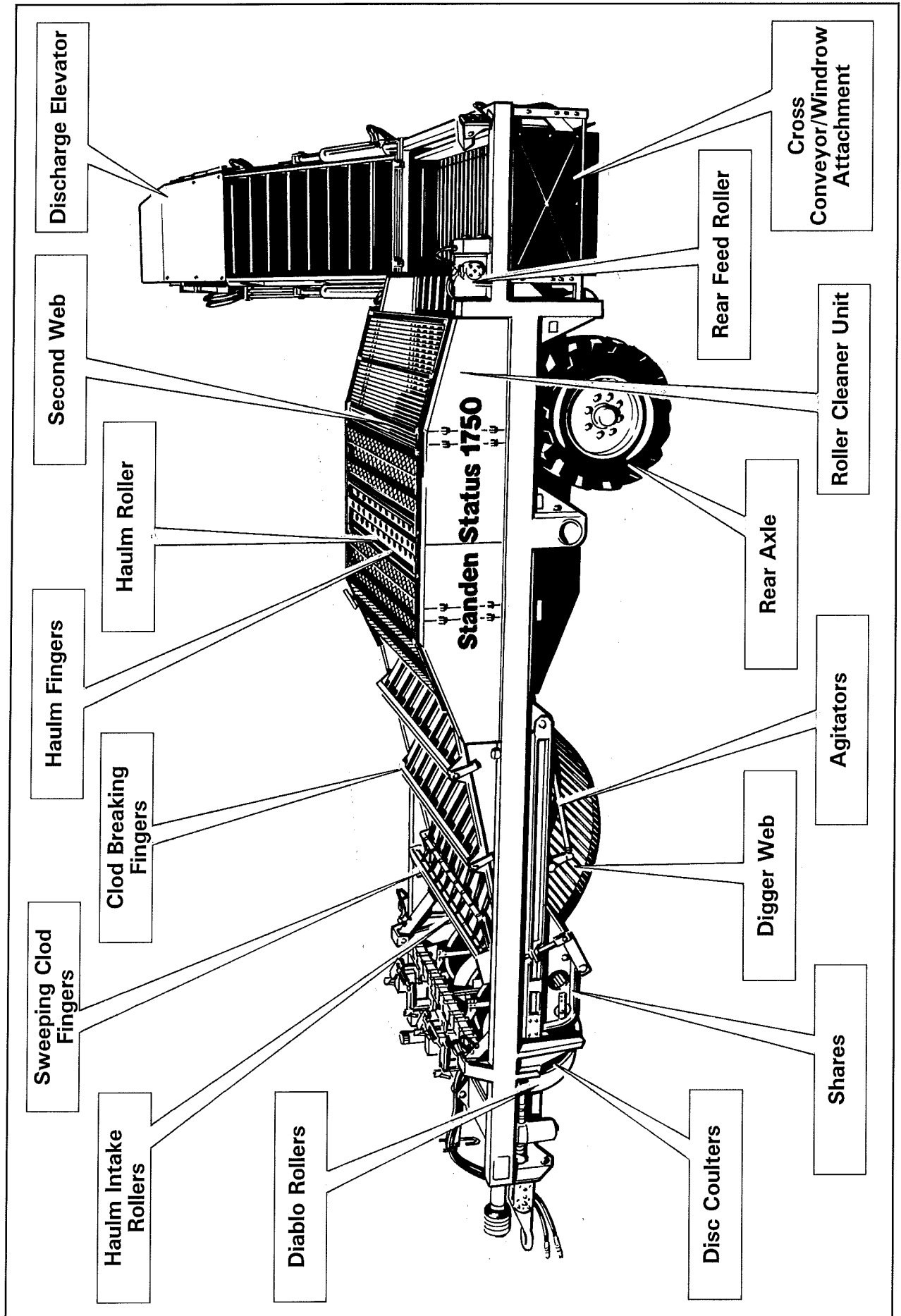
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Introduction to the Handbook

This handbook provides the information for the operation, adjustment and maintenance of your **Standen Status**. To enable you to achieve the best results from the machine, the manufacturer recommends that you read the handbook thoroughly prior to using the machine for the first time.

Record below the details of your machine.

Dealers name.....

Address.....

.....

Telephone number.....

Machine serial number.....

Date purchased.....

Date started work.....



This symbol indicates important safety messages within this handbook. When you see this symbol, be alert to the possibility of injury to yourself or others and/or damage to the machine and carefully read the message that follows.

Throughout this handbook the terms 'front', 'rear', 'left hand' (LH) and 'right hand' (RH) are derived from the tractor drivers position facing forward in the normal direction of travel.

Adjustments to the machine may have to be made singly or in combination according soil conditions. Always allow the machine to settle to a new setting before making further adjustments.

Recommended lubrication and maintenance instructions are included in this handbook and if followed will help to keep the machine in a safe working condition.

Warranty

Should the machine suffer any faults or defects within the warranty period, please contact your dealer. The warranty shall be effective only if the dealer is informed of any such defect as soon as practicable upon discovery.

Replacement Parts

Recommended replacement parts are designed for your machine and have the full backing of the warranty. Only when recommended parts are used can responsibility be considered under the terms of the warranty.

Section 2 of this handbook contains a list of spare parts available through your Standen Agents. Each illustration shows a complete unit or assembly in exploded form. Standen's policy of continual product development means that components or even complete assemblies are redesigned from time to time. Where possible the modifications are shown in the remarks column.

The first printing of each page in the spare parts section is identified as issue 1 at the foot of the page. When a complete unit or assembly has been redesigned the appropriate pages are revised and printed as issue 2. The revised pages are filed behind the existing issue so that a complete modification history is gradually built up. When using an illustration and parts list it is essential that both are of the same issue.

Note: Always quote the full serial number of your machine when ordering spare parts.

SAFETY

The Standen Status has been designed to comply with current Safety Regulations, however, as with all farm machinery there will be inherent dangers whilst operating and carrying out maintenance on the machine. The following list of precautions should therefore be brought to the attention of all persons operating and working on the machine. The list is not exhaustive. All farm machinery is potentially dangerous and great care must be exercised by the operators at all times. Standen Engineering Limited will not accept liability for damage or injury caused by their products except when such liability is specifically imposed by English statute.

OPERATION

The machine must never be operated by untrained personnel or children.



Never set machinery in motion without giving prior notice to the pickers. Ensure that everyone in the vicinity is aware of your intentions.



Never allow children in the vicinity where machines are working.



Never wear loose clothing and always tie back long hair whilst working on the picking area of the machine.



Before carrying out any work on the machine, lower the machine to the ground, switch off the tractor engine, apply the handbrake, remove the ignition key and disconnect the PTO shaft.



Never operate the machine with the discharge elevator in the folded transport position.



Never attempt to fit drive chains or drive belts to the machine while the drive sprockets or pulleys are in motion.



Normal safe working procedures should be adopted at all times. Reduce speed when transporting the machine on sloping ground.



Do not work on ground where there is a possibility of overturning or across steep slopes.



The working area should be kept clear and free of obstructions at all times.



Be alert for hidden obstructions. Should the machine hit an obstruction, stop and check for damage before proceeding.



Wear substantial or proper safety footwear. Avoid loose clothing near moving parts. Wear gloves when handling the implement or parts with sharp edges.



The operator must not leave the tractor seat until the machine has been lowered to the ground, the tractor engine switched off, the handbrake applied and the ignition key removed.



Never reverse or turn unless the digger assembly is in the fully raised position.



All guards, covers, warning transfers and safety devices must be correctly fitted and operable at all times.



Inspect the machine on a regular basis and replace damaged or worn parts as necessary.



Inspect the machine for damage after use. Rectify as required.



Never operate the machine in a state of disrepair.

TRANSPORT



When in transport, the digger assembly must be locked in the raised position .



When in transport, the discharge elevator must be must be in the folded transport position.



Only transport the machine at a speed suitable to the prevailing conditions. Be aware of the weight and overall length of the machine at all times

MAINTENANCE



When left free standing i.e. not attached to the tractor, the machine must be on level ground.



When working under the machine or if the machine is to be left to stand for any length of time, the digger assembly should be locked in the raised position.



Before working on the machine, all free moving parts should be locked to prevent them moving.



Inspect the hydraulic hoses and fittings for cuts and abrasions. Replace immediately.



The hydraulic system may be under pressure with the machine at rest. Ensure all residual pressure is released before disconnecting any pipework.



Regularly lubricate the machine as per the operators handbook and check the tightness of all nuts and bolts.



Always use mechanical or additional help when lifting heavy parts.



Safety is the responsibility of the persons working with this machine. Think "safety" at all times. Read and remember the contents of this handbook.

Standen Status

The Standen Status is a two row tractor drawn potato harvester designed to harvest two rows of potatoes, clean, elevate and load them into a trailer running alongside. The basic machine is manufactured in two digging widths, 1700mm and 1500mm and direct loads the crop with no manning on the machine. Optionally, a manned sorting table allowing up to four pickers can be fitted to the rear of the machine.



Before starting work, check that the machine is in a safe working condition. Check components which could work loose during operation such as wheel nuts, chains, sprockets and share arms etc. These checks are especially important during the first week of work.



Pay attention to the maintenance and lubrication instructions within this handbook and pay particular attention to the safety precautions, they are written as a guide to protect you and others.

Tractor Suitability

The recommended tractor for the Status is four wheel drive with 100hp for the unmanned machine and 120hp for the manned machine. These powers may need to be varied to achieve optimum output under different crop conditions.

The harvester requires a constant hydraulic oil supply from the tractor of a minimum 35 litres/minute with a low back pressure/free return to the tractor. Also required is a 12volt d.c. negative earth power supply rated at 30amp to feed the electrical control box which is mounted inside the tractor cab. The control box allows the hydraulically and electrically powered functions on the harvester to be operated from the drivers seat while the machine is working.

The status is designed to be towed from the pick-up hitch hook of the tractor and imposes a transferred load of 1.4 tonnes to the tractor with the basic unmanned model and approximately 1.1 tonnes with the manned model.

Tractor Wheel Setting

Both the front and rear wheels of the tractor must be set to straddle the bed. This will ensure the wheels run in the centre-line of the wheelings. The instructions for adjusting the tractor wheels are given in the tractor manufacturer's handbook.



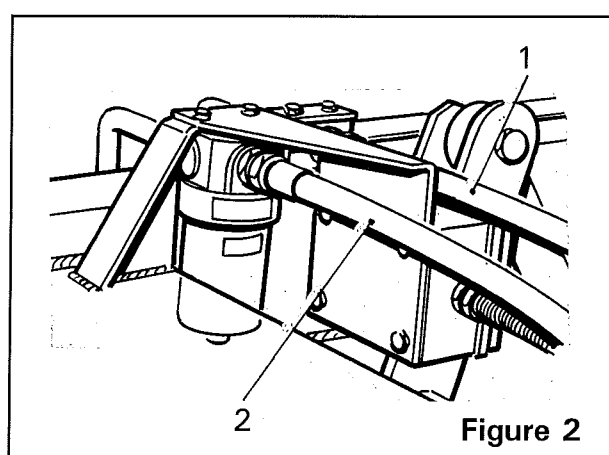
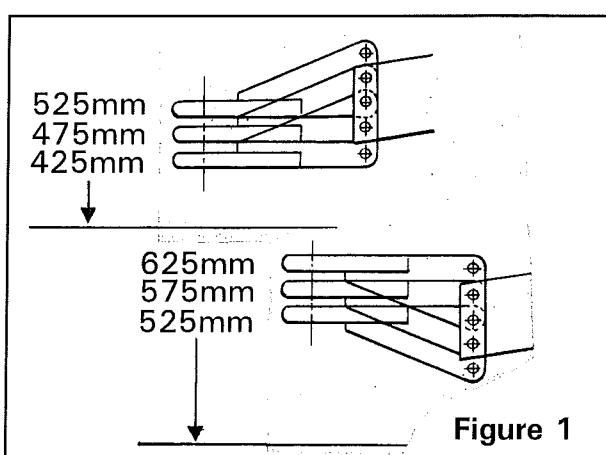
When carrying out wheel adjustments, always place the jack on firm ground under a solid part of the tractor. Before removing a wheel, place a stout support under the tractor frame in case the jack should become dislodged.

Attaching the Harvester to the Tractor



The operator should have read and understood the tractor operators manual prior to attaching the machine and putting it into work.

With the harvester standing on firm, level ground, reverse the tractor up to the harvester aligning the drawbar and pick-up hitch. Measure the height of the tractor hitch hook from the ground and set the harvester drawbar eye to one of the positions shown on the table (see figure 1). Raise the harvester on the pick-up hitch. The harvester chassis should be 50-75mm nose down. If the chassis is level, in a nose up attitude or extremely nose down, the drawbar eye should be adjusted accordingly to compensate.



Switch off the tractor engine before making any other connections. The hydraulic and electrical connections can then be made as detailed below.

1. Connect the hydraulic return hose marked blue (*item 1, figure 2*) to the tractor manufacturer's recommended low back pressure return coupling.
2. Connect the pressure hose marked red (*item 2, figure 2*) to the tractor outlet recommended for constant supply. If in doubt, refer to the tractor handbook. If the flow is adjustable, it should be set to supply a minimum 35 litres/minute. The harvester hydraulics will accept up to 63 litres/minute maximum.
3. Mount the in-cab control box securely inside the tractor in a position where it is comfortable to operate when seated.
4. Connect the harvester control harness plug to the socket on the control box ensuring that the harness is safely routed into the cab.
5. Connect the control box power supply cable to the tractors highest rated electrical plug if fitted, the blue lead to negative (-) and the brown lead to positive (+). If the tractor does not have a suitable power socket, then either ask your dealer to fit one, or connect the supply lead directly to the tractor battery.

PTO Shaft



It is essential that the PTO shaft is matched to the tractor to give the correct drive line and to ensure that it is safe in work.

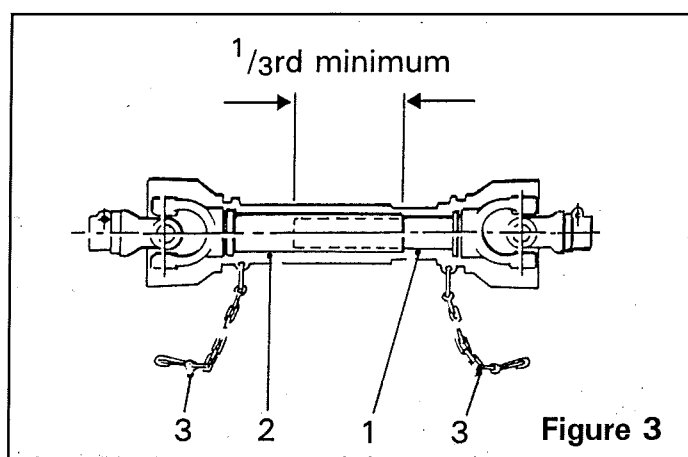
The PTO shaft supplied with the machine may require cutting to the correct length to suit individual tractors but should be kept as long as possible in all cases.

1. Separate the male shaft (*item 1, figure 3*) and female shaft (*item 2, figure 3*) and fit them to the tractor and harvester respectively.
2. Support the shafts alongside each other and mark the maximum possible length.
3. Cut the surplus length equally from both male and female drive tubes and guards.



Ensure a minimum of $\frac{1}{3}$ rd overlap and check that there is no possibility of the shafts butting up when the tractor linkage is raised.

4. Once the correct length of shaft has been obtained, remove all rough edges and swarf.
5. Grease the shafts to ensure they telescope correctly and then fit the shaft in place
6. Check the PTO shaft does not foul any part of the machine or tractor and inspect the guards to make sure they are fitted correctly and are not damaged.
7. Finally, attach the safety chains (*item 3, figure 3*) to secure anchoring points on the tractor and machine ensuring that the chains will not overtighten when the machine is turning.



Refer to the manufacturers instructions, these are fitted to all PTO shafts when the machine is delivered.



An incorrectly fitted or badly guarded PTO shaft can be lethal. Do not take chances.

Digger Assembly

The digger assembly, which includes the diablo rollers, disc coulters, shares and digger web, is retained in the raised position by a transport lock (*item 1, figure 9*). Before attempting to operate the digger assembly, the transport lock will need to be released.

The digger assembly is controlled by the three switches in the bottom left hand corner of the in-cab control box marked 'Auto /Manual', 'Left Digger Raise/Lower' and 'Right Digger Raise/Lower'. With the 'Auto/Manual' switch set at 'Manual', the two switches left and right operate separately to raise and lower the left and right hand digger lift rams.



Do not attempt to lift or lower the digger completely on one ram.

With the two switches set at 'Lower', the digger is in the float position and will continue to drop until the diablo rollers or the shares rest on the ridge. With the 'Auto/Manual' switch set at 'Auto', the depth control (if fitted) is brought into circuit and the left hand 'Raise/Lower' switch operates the system. 'Raise' will raise both rams together, while 'Lower' turns on the depth control and the diablo rollers will control the depth of each ram independantly. Without the depth control fitted, switching to 'Auto' and setting the left hand switch to 'Raise', will raise both rams together.

Shares

The shares are of a quick-attach type which do not require the share bar to be removed to detach the arms, this allows for easy alteration from row to full width digging and simple adjustment of each individual arm. Row widths from 30" to 40" can be catered for. The shares should be set symetrically about the centre-line of the machine.



When working under the machine or if the machine is to be left to stand for any length of time, the digger assembly must be locked in the raised position.



Before carrying out any work on the machine, lower the machine to the ground, switch off the tractor engine, apply the handbrake, remove the ignition key and disconnect the PTO shaft.

To adjust the shares for width:

On early machines, slacken the locknuts (*item 1, figure 4*) and release the grubscrews (*item 2, figure 4*). Loosen the mounting bolts (*item 3, figure 4*) and then slide the share arm to the required position. Finally, retighten the mounting bolts (*item 3, figure 4*) and retighten the grubscrews (*item 2, figure 4*) and locknuts (*item 1, figure 4*).

On later machines, loosen the clamp plate locknuts (*item 5, figure 4*) and slide the share to the required position. Finally, retighten the clamp plate locknuts.

The angle of the digging shares can be altered by rotating the share bar (*item 6, figure 4*). This is done by lengthening or shortening the adjuster (*item 1, figure 5*) on each side of the share bar.

To adjust the angle of the shares:

1. Release the locknuts (*item 2, figure 5*) on both sides of the machine.
2. Turn the required locknut to rotate the share bar. The top nut turned down will pitch the nose of the shares down. The bottom nut turned up will pitch the nose of the shares up.
3. When the required position is reached, lock the nuts together against the adjuster plate.

Note: Check that the shares are adjusted evenly on both sides. Measure from the tip of the outside shares to the disc support bridge, not the length of the adjuster thread.

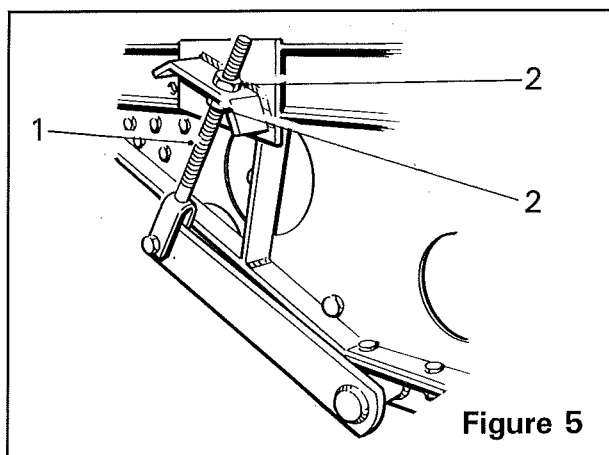
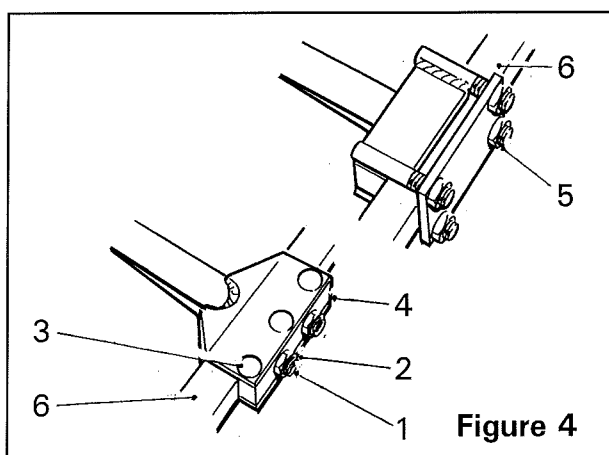


Do not pitch up the shares such that the web is running on the share arms.

To remove or fit a share:

On early machines, slacken the locknuts (*item 1, figure 4*) and release the screws (*item 2, figure 4*). Remove the mounting bolts (*item 3, figure 4*) and the clamp block (*item 4, figure 4*). The share arm can now be pulled off forwards. Refitting is the reverse procedure.

On later machines, simply remove the clamp plate locknuts (*item 5, figure 4*).



Diablo Rollers

The diablo rollers control the depth of digging. Their setting is very important to the effective operation of the harvester.

To set the row width of the diablo rollers:

1. Release the clamp collars (*item 1, figure 6*) on the pivot shaft (*item 2, figure 6*).
2. Release the clamp bolts (*item 1, figure 7*) on the reaction bracket (*item 2, figure 7*).
3. Slide the roller frame to the required setting and then slide the reaction bracket along the support beam until it is in line with the frame.
4. Retighten the collars (*item 1, figure 6*) and reaction bracket bolts (*item 1, figure 7*).
5. Repeat for the other diablo roller ensuring they are set symetrically about the centre-line of the machine.

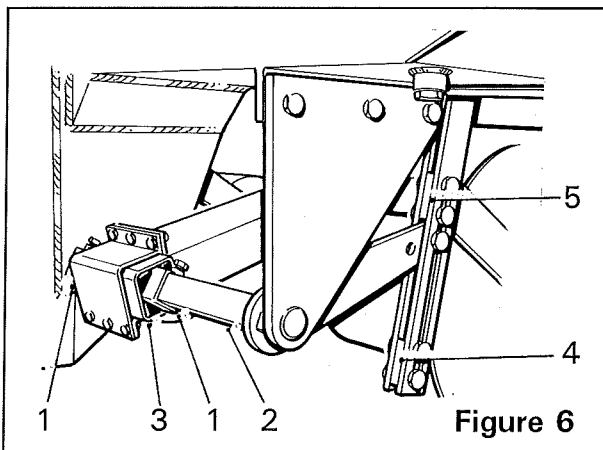


Figure 6

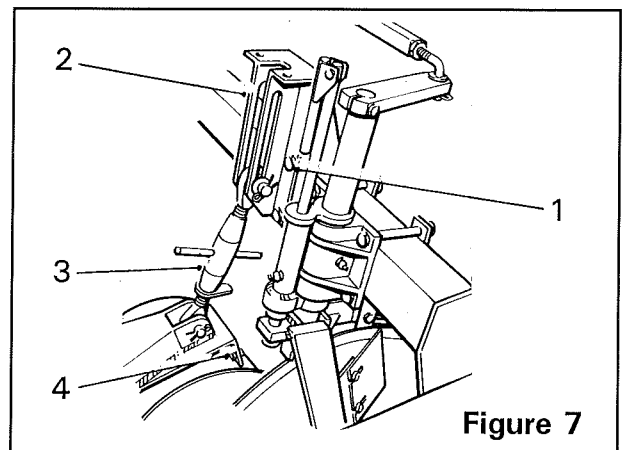


Figure 7

The turnbuckle (*item 3, figure 7*) sets the working depth of the diablo rollers. Lengthening the turnbuckle will cause the shares to run shallower beneath the top of the ridge and shortening will allow the share to run deeper.

The diablo rollers are mounted on rubber torsion springs (*item 3, figure 6*) which allow the weight to be carried off the rollers to reduce compaction of the ridge, or for additional pressure to be put on the ridge to consolidate it in light conditions when the flow over the shares is poor.

The diablo roller pressure setting needs to be made when the machine is in work so that the relative working position of the diablo roller to the ridge is correct.

By raising the bottom stop (*item 4, figure 6*) on the pressure setting link, weight is removed from the diablo roller. Lowering the top stop (if fitted) (*item 5, figure 6*) puts extra pressure on the roller.

Note: Care should be taken to ensure that the diablo roller is not locked solid. Free float must be available when the digger is raised and lowered.

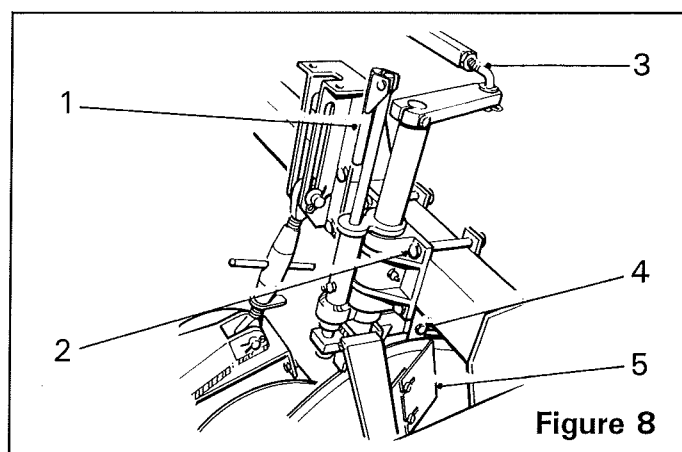
The diablo rollers are each fitted with a scraper (*item 4, figure 7*). The scrapers should be set as close to the rollers as possible without fouling them.

Automatic Depth Control

An optional ride sensing control kit can be fitted to the diablo rollers. The depth control kit allows each roller to sense the height of the ridge it is running on and in doing so, maintains the constant depth of the share below the top of the ridge.

By setting the control box switch marked 'Digger Share Auto/Manual' to 'Auto', and then setting the 'Raise/Lower' switch to 'Lower', the automatic depth control is brought into circuit.

The depth control sensor unit fits directly on top of the diablo roller reaction bracket and senses the position of the depth adjusting turnbuckle. The electrical leads plug into the relevant sockets on the harvester junction box on the front right hand side of the chassis using a separate lead for each row unit. The proximity switches inside the depth control box are preset and will not normally need to be adjusted in service. For the proximity switch adjustment procedure, see the maintenance section of this handbook.



Disc Coulters

For two row work, the harvester is fitted with four 64cm diameter disc coulters and for full width bed work, with two. The disc coulters (*item 1, figure 9*) are designed to run on either side of the ridge, cutting and parting the haulm and trash in front of the shares whilst at the same time containing the ridge under the diablo roller and feeding it over the shares onto the digger web. The disc coulters are adjustable for depth of work and for different row widths.

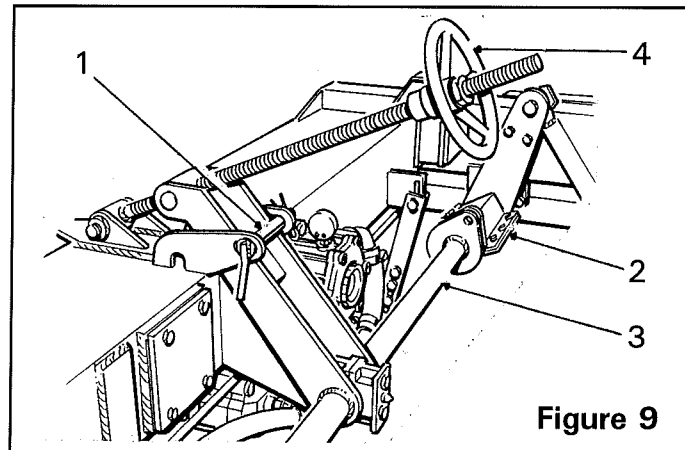
To set the disc coulters depth, turn the adjusting handle (*item 1, figure 8*) until the required depth is reached.

To set the disc coulters row width/cutting width:

1. Release the four retaining bolts (*item 2, figure 8*).
2. Disconnect the adjustable tie bar (*item 3, figure 8*) from one assembly.

3. Slide the disc assembly along the mounting beam until it is in the position required.
4. Retighten the four retaining bolts (*item 2, figure 8*) and refit the adjustable tie bar.
5. Adjust the tie bar (*item 3, figure 8*) so that the discs run parallel.

The disc coulters are each fitted with two scrapers (*item 4 & 5, figure 8*), these should be set as close to the disc as possible without fouling it.



Setting the Digger Suspension

The rubber torsion spring suspension on the digger assembly is designed to reduce pressure on the ridges and allow accurate, sensitive depth control from the diablo rollers.

The torsion springs (*item 2, figure 9*) are mounted on a cross shaft (*item 3, figure 9*) which is linked to each side of the digger assembly. Holes are provided to lock the springs out of work if required.

The setting of the digger suspension can only be effectively carried out when the machine is in work.

To set the required amount of spring suspension the handwheel (*item 4, figure 9*) should be screwed down until, when the harvester is travelling forward, the diablo rollers lift easily each side of the digger thus maintaining the share depth. Too much spring assistance will cause the digger to ride out of work, while too little will compact the ridge and in turn may lead to crop damage.

The optimum setting for the suspension will vary for different soil and crop conditions, therefore the operator will need to monitor the setting especially when changing from one field to another.

Digger Web

The digger web will be either 1700mm or 1500mm wide depending on the build specification of the machine. Web pitches of 28mm, 32mm, 36mm, 40mm, 45mm and 50mm are available for both widths and need to be selected to suit the crop and soil conditions being harvested at the time. Changing webs is a simple operation of removing the joining rod, connecting the alternative web to the end of the existing web, then slowly winding it on as the other is wound off and then joining the replacement web together on the machine.

The digger web drive uses the Standen 'Supadrive' web configuration fitted with a reverse running assister drive on the return side. This gives a virtually slip-free drive under most conditions and reduces the load on the web drive sprockets.

The main digger web drive is taken from the tractor PTO via four SPB section 'V'belts (*item 1, figure 10*). The drive shaft (*item 2, figure 10*) connects to the gearbox (*item 1, figure 11*) with a Hardy Spicer drive shaft eliminating any misalignment. From the gearbox the drive is by chain onto the assister drive shaft and then by gear train to the main web shaft, this ensures that the web drive stays exactly in phase eliminating any hunting in the web.

The digger web drive chain (*item 2, figure 11*) is fitted with an adjustable tension roller (*item 3, figure 11*) which should be checked regularly and adjusted as required.



*Overload protection for the digger web is provided by the 'V'belts (*item 1, figure 10*). Do not overtighten the belts. The belts should be tensioned to drive normally without slipping, but not so great that the belts cannot slip when the drive is obstructed.*

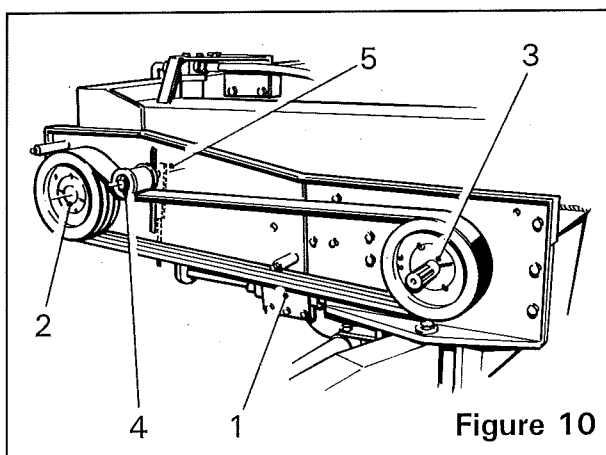


Figure 10

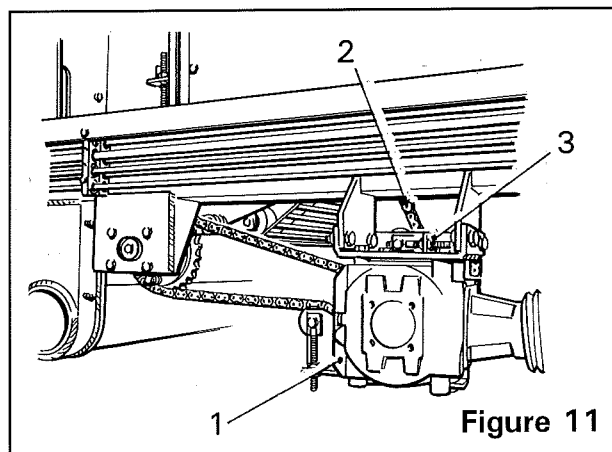


Figure 11

Haulm Intake Rollers

The haulm intake rollers are fitted at the front of the digger web for two reasons. The primary reason is to draw in loose haulm and trash from the sides of the ridges and feed it onto the digger web, thus preventing it from building up on the leading edges of the web sides or between the centre disc coulters. The second function is to prevent potatoes from rolling out of the front of the digger web between the discs coulters and the web sides.

The haulm intake rollers (*item 1, figure 12*) are spring loaded down onto the digger web bars. The outer rollers are fitted with rubber torsion springs (*item 2, figure 12*) which are mounted to the web sides by threaded bolts (*item 3, figure 12*) which allow the required amount of tension to be applied by rotating the bolts and locking them in place. The centre rollers (if fitted) are mounted on a spring loaded arm and are tensioned with a coil spring and threaded adjuster.

Depending on the width of the digger web and the row configuration being lifted, the build of the haulm intake rollers will vary. If haulm intake rollers are not required, optional swinging, or spring loaded rakes are also available to prevent crop loss.

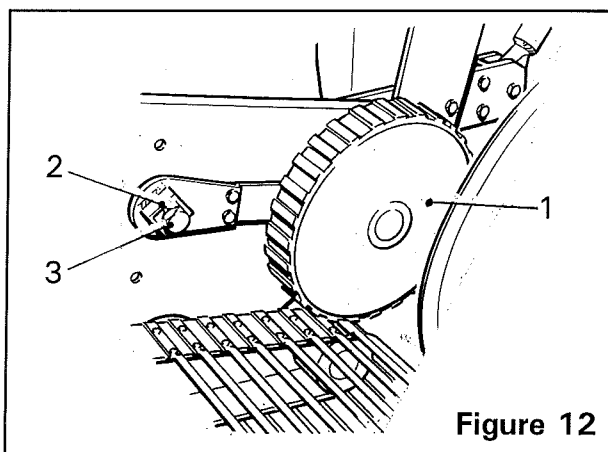


Figure 12

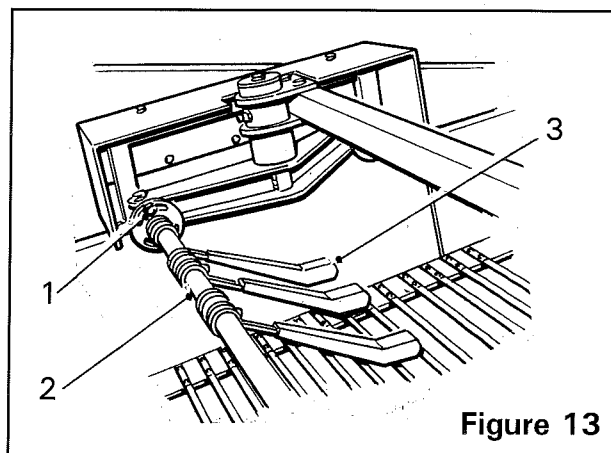


Figure 13

Sweeping Clod Fingers

The sweeping clod fingers (if fitted) have three functions, firstly to spread the ridge to the full width of the digger web and so maximise the area used for soil separation, secondly to break up the ridge when it is solid and so start to separate the potatoes from the soil, and thirdly to rub the soil through the web before reaching the agitators.

The adjustment procedure for the clod fingers is as follows:

1. Slacken the clamp bolts (*item 1, figure 13*).
2. Rotate the mounting tube (*item 2, figure 13*) until the fingers (*item 3, figure 13*) are at the required height above the web.
3. Retighten the clamp bolts (*item 1, figure 13*).

It is not always necessary to set both rows of clod fingers completely down, it is often better to have the second row lower than the first.

On later machines, the length of the drive connecting rod can be adjusted so that the clod fingers unit can be positioned further up or down the digger web.

In heavy green top or rubbish, the clod fingers may cause material to ball up and overload the haulm roller. If this occurs, the fingers should be lifted out of work.

If the sweeping clod fingers are not going to be used for a period of time, disconnect the drive connecting rod at the agitator mounting to reduce wear on the mechanism.

Agitators

The mechanically driven agitators are controlled from the tractor cab. The in-cab control box switch marked 'Digger Web Agitation Increase/Decrease' operates the agitator adjuster ram. By setting the ram at any position within its stroke, it is possible to separate soil from the crop as it is elevated up the digger web. On light soils, care should be taken not to remove too much soil too early as this can lead to crop damage if all of the soil cushion has been removed before reaching the haulm roller.

Clod Breaking Fingers

The clod breaking fingers (if fitted) consist of two staggered rows of trailing rubber blocks. These work by rolling the clods and potatoes which, in a lot of soils, has the effect of splitting the clods and allowing the smaller pieces to fall through the web. To vary the effect of the clod breakers they can be raised and lowered onto the web by either adjusting the turnbuckle which will adjust the height to a preset position, or by the optional cab controlled actuator operated by the switch marked 'Clod Breaker Raise/Lower'. The remote adjustment has the obvious advantage of being able to alter the setting to suit variations in the crop as they occur.



Do not attempt to adjust the manually set clod breakers while the machine is running. Always stop the tractor and turn off the engine.

Haulm Roller



Do not attempt to adjust, unblock or open any of the access guards to the haulm roller while the machine running and never attempt to reach into the haulm roller from below the machine. Always stop the tractor and turn off the engine first.

The haulm roller is mounted on bearings running on the main digger web shaft and is designed to pinch the haulm and trash and drop it back onto the ground under the machine. The adjustments for the haulm roller are as follows:

To increase/decrease the gap between the haulm roller and digger web, on early machines, release the locknut (*item 1, figure 14*) and turn the hexagon on the spring rod (*item 2, figure 14*). On later machines, release the locknut (*item 3, figure 14*) and turn the setscrew (*item 4, figure 14*). Care must be taken to set the gap equally on both sides. Do not attempt to close the gap too much or the web joiner may foul the haulm roller causing damage to both.

To increase/decrease the haulm roller spring tension, on early machines, turn the spring nut (*item 5, figure 14*). Adjust both sides evenly and check the setting by measuring the compressed length of the springs (*item 6, figure 14*). On later machines, adjust the setting of the spring tensioner (*item 7, figure 14*). Adjust both sides evenly and check the setting by measuring the length of exposed thread on the spring tensioners.

Rotating the position of the haulm roller relative to the digger web alters the amount of material the roller removes. The roller position can be altered by turning the handwheel/s (*item 8, figure 14*).

The higher the roller is positioned relative to the web, the more material will be removed. Lowering the roller relative to the web will allow the flow of material to pass over the top of the roller onto the second web.

Adjusting the haulm roller until the maximum amount of haulm is removed with the minimum amount of potatoes being pulled through or nipped requires careful setting. This setting will need to be altered for different crop conditions, but the initial setting should start with the roller well down and then gradually raise it up. For effective harvesting, this is one of the most critical adjustments, hence the simplicity with which it can be varied on the Status.

The haulm roller is fitted with a scraper. Set the scraper as close to the roller as possible without fouling it.

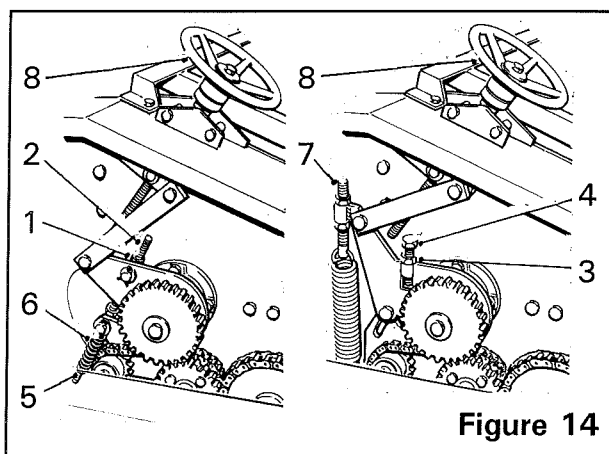


Figure 14

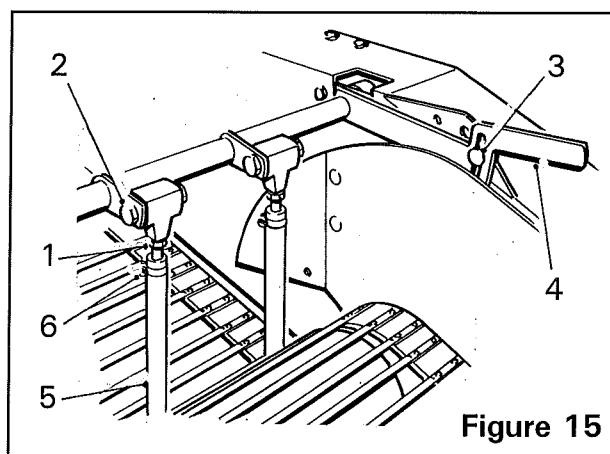


Figure 15

Haulm Fingers

Mounted above the haulm roller are a row of adjustable haulm fingers. The function of the fingers is to catch the haulm and direct it down into the haulm roller.

Moving the haulm fingers away from the web will allow a clearer flow for the crop. In green top or heavy trash it may be necessary to rotate some of the fingers out of the crop flow to prevent overloading of the haulm roller and excessive damage to the crop.

On early machines, each finger (*item 1, figure 15*) is mounted on a rubber spring block and is locked to the mounting tube with a nut and bolt. The fingers can be individually positioned by slackening the mounting bolts (*item 2, figure 15*) and rotating the fingers to the required position.

By releasing the adjuster handle clamp bolt (*item 3, figure 15*) and raising/lowering the handle (*item 4, figure 15*), all of the fingers can be moved as a set.

A plastic sleeve (*item 5, figure 15*) is fitted to each finger and is fastened with a hose clamp (*item 6, figure 15*). The sleeves are fitted to prevent bruising of the potatoes and should be replaced when they wear through or are lost.

Second Web

The second web is 1720mm wide regardless of the digger web width. Three web pitches are available, 35mm, 40mm and 50mm pitch. Rubber covers are fitted to the web bars to minimise crop damage and drop-away links are fitted to release any material that gets inside the web. The second web is sprocket driven on the web belting and the drive shaft is mounted on the return side of the web to allow only a small drop onto the cleaner unit.

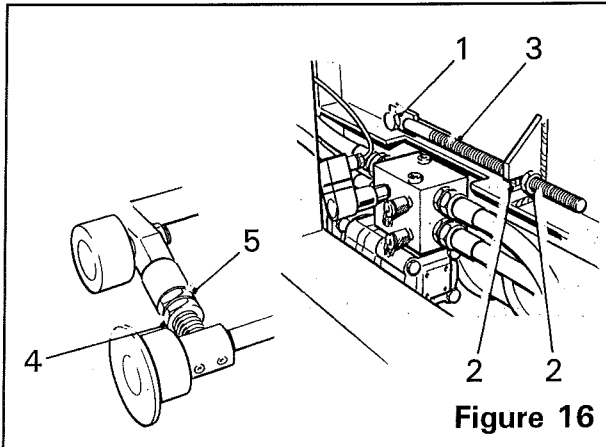


Figure 16

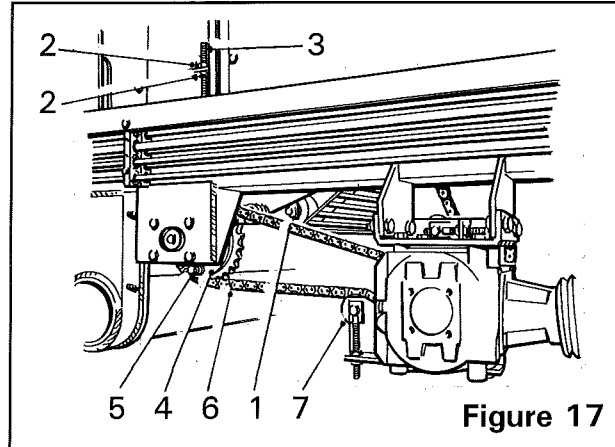


Figure 17

On early machines, tracking adjustment is made by loosening the mounting bolts (*item 1, figure 16*) and turning the locknuts (*item 2, figure 16*) to reposition the adjusters (*item 3, figure 16*). On later machines, loosen the roller support locknuts (*item 4, figure 16*) and turn the adjuster nuts (*item 5, figure 16*).

To accommodate the variation in web length that occurs when raising and lowering the cleaner unit, the web is fitted with a pair of spring loaded tension rollers (*item 1, figure 17*). The pressure exerted by the tension rollers should be set with the cleaner in its mid-angle position after the web has been tracked with the cleaner fully raised. The tension rollers are adjusted by turning the locknuts (*item 2, figure 17*) to reposition the spring adjusters (*item 3, figure 17*).

The second web is chain driven via a spring-loaded slip clutch (*item 4, figure 17*) which is fitted to protect the web should any major blockage occur. The amount of torque required to start the clutch slipping can be varied by turning the six adjusting bolts (*item 5, figure 17*). The clutch should be set to just drive without slipping under normal conditions. Ensure all six bolts are adjusted equally.

The second web drive chain (*item 6, figure 17*) is fitted with a tension roller (*item 7, figure 17*) which should be checked regularly and adjusted as required.



Make all adjustments evenly. Uneven adjustment may cause the web to run to one side and eventually cause premature failure of the web or slip clutch.



Care should be taken when adjusting the slip clutch adjusting bolts, as overtightening of the bolts will render the clutch ineffective.

Roller Cleaner Unit

The harvester is fitted with a 20 roller cleaner unit. Two hydraulic motors running in parallel drive the cleaner unit rollers and are able to automatically reverse to clear blockages.



Regular checks should be made to ensure that any damaged seals or bearings that have worked loose are rectified before any damage occurs. Worn or damaged seals will show up due to oil leakage at the back of the gear case. Bearing wear will be seen as excessive play (1-1.5cm) at the end of the roller shafts. For seal replacement/bearing adjustment procedures, see the maintenance section of this handbook.

Control of the roller cleaner unit is from the in-cab control box. The controls consist of; 'Cleaner Angle Increase/Decrease', 'Manual Reverse' (these controls are also duplicated on the rear control box), 'Cleaner Stop/Run' and 'Cleaner Speed'. A manual override is fitted to the cleaner reverse control. When the button marked 'Cleaner Manual Reverse' is pressed, either in the tractor cab or on the rear control box, the reverse sequence is started. This allows stones and trash seen by the operators to be ejected before a blockage occurs.

Cleaner Unit Angle

The steeper the angle of the cleaner unit, the quicker the crop flows over it and the less time it has to be cleaned. The angle is variable through 11° by using the cleaner 'Raise/Lower' switches.

Roller Speed

By increasing the speed of the rollers, the crop is accelerated across the table by the scrolled rollers while the heavier soil and stones settle and are pulled through. Slowing the rollers down holds the crop on the table longer allowing more cleaning to take place. It will be necessary to determine the optimum speed and angle of the table to suit the crop being harvested. Variations in crop and soil conditions will change the effectiveness of the table.

Roller Size

Two sizes of plain rubber roller are available, 82.5mm and 74.5mm, these are normally used in conjunction with 92.25mm spiral scrolled rollers. The large diameter plain rollers will normally be used where tuber size is small and in dry soil conditions. The small diameter plain rollers are generally used on main crop and where soil conditions are wetter and heavier. However, there is a cross over in the use of the alternative rollers. By varying the angle of the table and the roller speed, the operator will often find an acceptable sample can be achieved without changing rollers. The same sizes of roller are also available in polyurethane covering, which has been found to be more tolerant of sharp stones. Plain and scrolled steel rollers are also available primarily for use on crops such as carrots and parsnips, but can also be successfully used on some varieties of potato.



All guards must be in place when the cleaner unit is in operation. Do not attempt to clear any blockage from above or below the rollers unless the machine has been stopped and the tractor engine has been switched off. Always isolate the emergency stop button before working on the cleaner unit to prevent accidental restarting.

Changing the Cleaner Unit Rollers

The rollers are retained on the cleaner unit shafts by a single bolt and washer (*item 1, figure 20*). To remove a roller, remove the bolt and slide the roller off the shaft. The rollers are a close fit on the spigot at the gearbox end and may need to be prised or bumped free. When replacing a roller, it is advisable to smear grease on the spigot. Take care to align the driving flats as the shaft slides home and do not force them if they are not in line.

Cleaner Unit Roller Scrapers

Scrapers are fitted to prevent excessive build up of soil and trash damaging or stalling the cleaner unit. To adjust the scrapers, slacken the mounting bolts (*item 1, figure 18*) and slide the scraper blade (*item 2, figure 18*) up until it is 2-3mm clear of the roller. Retighten the mounting bolts and check that the rollers do not foul on the scraper blades when running.

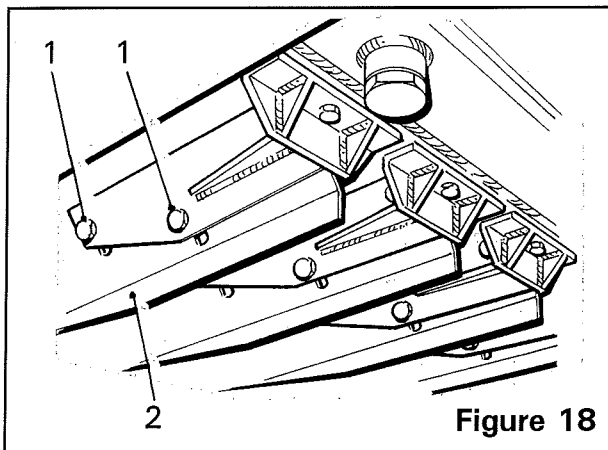


Figure 18

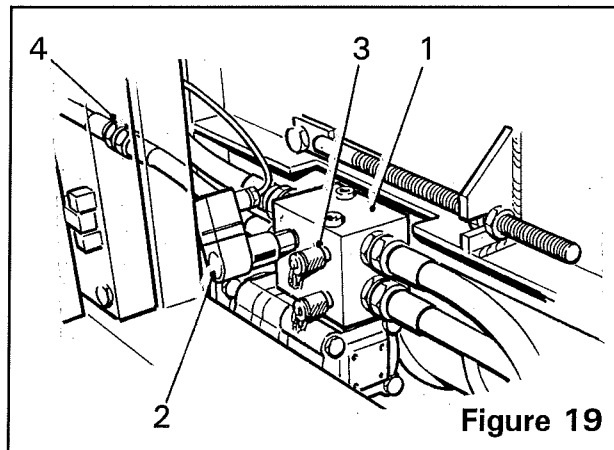


Figure 19

Setting the Cleaner Unit Reverse Pressure

During varying harvesting conditions it may be found necessary to change the pressure at which the cleaner reverses. The automatic reverse control is operated by an adjustable pressure switch and an electronic timer relay. The pressure switch is mounted on the cleaner unit left hand motor manifold (*item 1, figure 19*).

To adjust the pressure switch:

1. Lift the cover cap (*item 2, figure 19*) to expose the adjuster screw that changes the switch setting.
2. Connect a pressure gauge to the forward gauge port (*item 3, figure 19*) and a throttle valve between the male/female coupling (*item 4, figure 19*) of the return hose. Connect a self powered test light or multimeter across the pressure switch terminals leaving the harness plug disconnected.
3. Run the cleaner unit at approximately half speed and throttle the flow from the cleaner motors slowly until the pressure switch makes. Note the pressure gauge reading, this is the reverse pressure.
4. Adjust the the screw on the switch until the required pressure is reached.

Rear Feed Roller

In a direct loading machine, as the crop passes off the cleaner unit onto the cross web, it passes over the rear feed roller. The function of this roller is to remove small pieces of material that have gone between the cleaner unit rollers but have not been pulled through. By feeding the material back under the cleaner unit, it eliminates build up on the front of the cross conveyor and therefore prevents blockages to the crop flow. The feed roller is hydraulically driven from the discharge elevator circuit and runs in reverse to the crop flow.

The feed roller drive chain (*item 2, figure 20*) is tensioned by loosening the motor mounting bolts (*item 3, figure 20*) and then sliding the motor in the required direction. An adjustable scraper (*item 4, figure 20*) is mounted on the cross web side. This should be set to just clear the feed roller.



To adjust the roller scraper it is necessary to work under the machine . Ensure the machine is stopped and the tractor engine switched off. Isolate the emergency stop button to prevent accidental restarting of the machine.

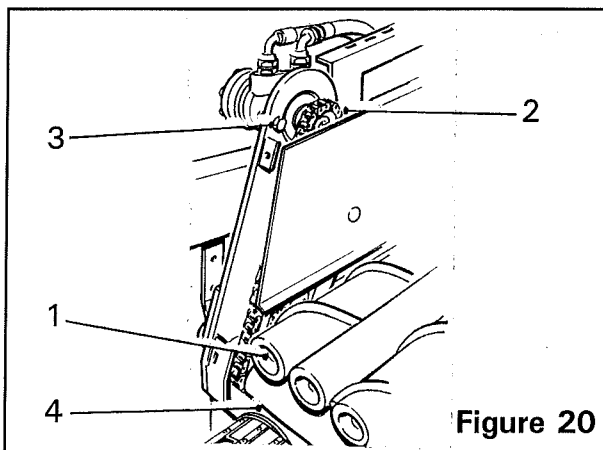


Figure 20

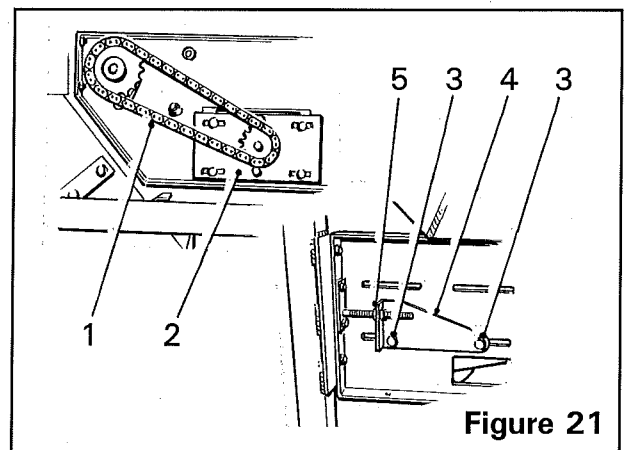


Figure 21

Cross Conveyor

The 40mm pitch, 900mm wide cross conveyor web is fitted with rubber covered rods. A 35mm pitch web is also available as an option. The cross conveyor is hydraulically driven in series with the discharge elevator and is controlled by the elevator switches in the tractor cab.

The drive chain (*item 1, figure 21*) is tensioned by sliding the motor mounting plate (*item 2, figure 21*) sideways. To tension or track the cross conveyor web, slacken the mounting bolts (*item 3, figure 21*) and adjust the front and rear roller plates (*item 4, figure 21*) by turning the locknuts (*item 5, figure 21*). An inspection plate is fitted to the cross conveyor which allows small stones to be removed from inside the web.



Ensure that the web is tensioned evenly and runs true after adjustment. Failure to do so may lead to premature failure of the web. After removal, the inspection plate must be replaced to cover the web run onto the cross conveyor flanged roller.

Windrow Attachment

An optional windrow attachment can be fitted to the harvester which allows the crop to be discharged between the two unlifted rows on the left hand side of the machine. When fitted, the windrow kit is operated by the switch next to the elevator speed control knob on the control box. The switch energises the control valve which stops the discharge elevator and reverses the cross web. Coupled to the hydraulic motor is a hydraulic ram that opens the folding discharge chute. The chute is linked to open and close depending on the rotation of the cross web motor, so cannot be opened independently.

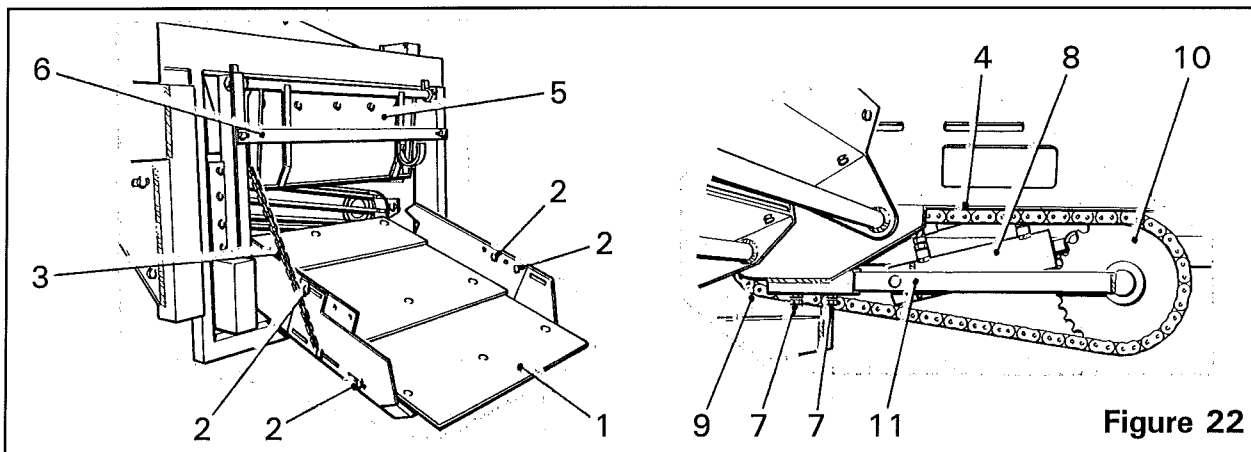


Figure 22

The discharge chute can be adjusted to set the height and reach to match the row widths being worked. The discharge reach is adjusted by extending or shortening the length of the chute (*item 1, figure 22*). The sides and base of the chute are released by slackening the four bolts (*item 2, figure 22*) each side and sliding the end of the chute to the required length. If the end of the slot is reached before the required adjustment is achieved, the bolts can be moved to the next pair of holes showing through the slots which will allow a further 50mm of movement. The height of the windrow chute is set by the chain (*item 3, figure 22*).

The position of the chute when use is set by the length of the chain (*item 4, figure 22*). As the chute is raised it pushes the top flap (*item 5, figure 22*) closed to turn the crop along the cross web to the discharge elevator. The open and closed position of the windrow chute will have been preset at the factory but if necessary can be adjusted as follows:

Set the chute into the transport position and fit the stay (*item 6, figure 22*). Release the clamp screws (*item 7, figure 22*) and remove the chain (*item 4, figure 22*). Open the ram (*item 8, figure 22*) to its fully extended position and refit the chain around the sprockets (*item 9 & 10, figure 22*). Tension the chain by pulling on the ram mounting (*item 11, figure 22*) and retighten the clamp screws (*item 7, figure 22*).



The top flap must be set to prevent inadvertant access to the ends of the cleaner unit rollers. Do not attempt to reach under the flap or to make any adjustments to the chute when the machine is running. Always switch off the tractor engine and isolate the emergency stop button to prevent accidental restarting of the machine.

Discharge Elevator

The hydraulically driven discharge elevator is designed to fold within the width of the machine for transport and open out for work when loading potatoes into a trailer running alongside.

The folding and unfolding of the discharge elevator is controlled by the switches on the control box marked 'Discharge Elevator Fold Out/Fold In', which operates the bottom section, and 'Swanneck Raise/Lower', which operates the top section. The bottom section of the elevator is primarily used to set the working height and reach. The top section is used to adjust the discharge height of the crop into the trailer and allow for even loading.

The discharge web is driven from the top of the elevator by a hydraulic motor. The motor is controlled by a proportional valve from the speed control knob on the in-cab control box. The numbers on the speed control are used to indicate a repeatable speed setting with the higher numbers relating to a higher speed.



The manual override knob (item 5, figure 25) fitted to the elevator proportional valve should be wound fully out at all times. Failure to do so prevents the web being stopped from the control box.

The switch marked 'Discharge Elevator Run/Stop/Run Auto', starts and stops the web independently of the speed control. In the 'Run Auto' position, the switch will bring the automatic height control (if fitted) into operation .

Because the tractor oil supply is used to power the discharge elevator, the maximum speed of the web will depend on the hydraulic flow from the tractor and may be subject to slight fluctuation when ram services are operated. If ram services are taken to relief (dead headed), the elevator will stop while the tractor relief valve is blowing.

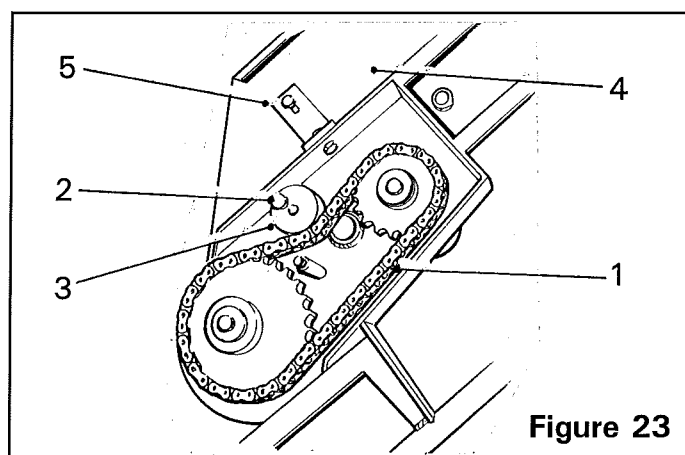


Figure 23

The discharge elevator drive chain (*item 1, figure 23*) is tensioned by loosening the retaining bolt (*item 2, figure 23*) and rotating the tensioner block (*item 3, figure 23*). To ensure the web panels (*item 4, figure 23*) do not foul the elevator web, they are mounted on slotted brackets (*item 5, figure 23*) which allow them to be positioned vertically and horizontally relative to the web. Care should be taken when adjusting the panels to ensure they do not rub on top of the web bars, as this will cause rapid wear and damage to both the web and panels.

Rear Axle

The rear axle is fitted with steerable wheels and is linked to the chassis by a pivot and hydraulic ram which allows the harvester to be levelled relative to the ground.

Control of the steering and levelling is from the in-cab control box. The switch marked 'Machine Level Raise/Lower' operates the levelling ram (*item 1, figure 24*) between the chassis and the axle. Steering is operated by the push buttons. The two yellow buttons 'Left' and 'Right', steer the rear of the machine in the indicated direction. The red button 'Axle Centre' when pressed and held, operates the self centring circuit which automatically sets the wheels to the straight ahead position.

Two different sized wheels are fitted to the harvester. The fixed wheel on the left hand side is tracked to match a position suitable for all row widths and is an 18x19.5 Trac Grip tyre. The adjustable right hand wheel is a larger 13.6x28 Trac Grip tyre and, with its greater rolling radius, gives better performance on soft soil.

The right hand wheel can be adjusted for 32"-36" row widths. By resetting the wheel pan position, the range can be extended to 30" and 40" work. The adjustment procedure is as follows:



Before attempting to adjust the wheels, ensure the machine is on firm, level ground. Position the jack under the axle beam inboard of the clamp. Make sure the jack is stable when lifting the machine and before removing a wheel, place additional support under the chassis in case the jack should fail or become dislodged.

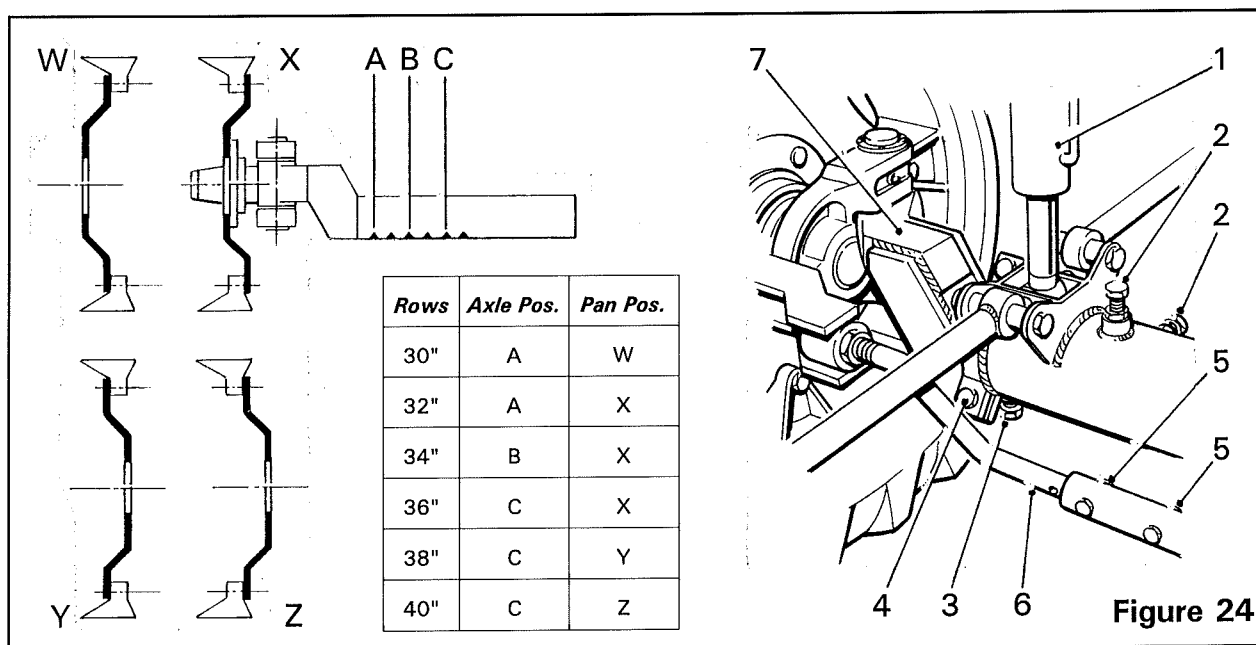


Figure 24

1. Switch off the tractor engine, apply the hand brake and jack up the machine.
2. Slacken the clamp bolts (*item 2, figure 24*) and the locking bolt (*item 3, figure 24*), and release the clamp (*item 4, figure 24*).
3. Remove the drag link bolts (*item 5, figure 24*).

4. To set the track, pivot the wheel by hand to lengthen or shorten the drag link (*item 6, figure 24*) and replace the drag link bolts loosely.
5. Slide the axle beam (*item 7, figure 24*) out to the required position by pulling on the wheel opposite the drag link.
6. Relocate the locking bolt (*item 3, figure 24*) into the appropriate dimple (*A,B,C, figure 24*) under the axle beam and retighten all bolts.
7. Check the tracking is correct and the wheels are parallel.

If it is necessary to reposition the wheel pan, reassemble them to the relative positions shown (*W,X,Y,Z, figure 24*).

Mechanical Drives

All power requirements for the harvester are taken hydraulically or mechanically from the tractor power take-off shaft. The PTO drive shaft is coupled to the nose of the gearbox (*item 3, figure 10*). Mounted on the nose of the gearbox, a quadruple 'V' belt (*item 1, figure 10*) transmits the power across to the side drive shaft. The side shaft is connected to the input of the side gearbox. From the gearbox, chain drives power the digger and second webs, these are detailed in the relevant sections within this manual.

Adjustment of the 'V' belt (*item 1, figure 10*) tension is carried out by slackening the adjuster clamp bolt (*item 4, figure 10*) and screwing down the tensioner (*item 5, figure 10*) until the correct tension is achieved.



Do not overtighten the 'V'belts. Besides providing a drive the 'V'belts act as a slip clutch. The belt tension should be sufficient to drive normally without slipping, but not so great that the belt cannot slip when the drive is obstructed.



All revolving drives; chains, pulleys, shafts etc. are potentially dangerous. Never attempt to make any repairs or adjustments while the machine is running. Always switch off the tractor engine, apply the hand brake, remove the ignition key and disconnect the PTO shaft. Failure to observe these basic precautions is likely to result in personal injury.

The main drive can be fitted with an optional electro-magnetic clutch. The clutch replaces the side drive shaft 'V' belt pulley allowing the mechanical web drives to be isolated if required. The electromagnetic clutch is actuated by the switch on the in-cab control box.

Hydraulic Systems

Two completely separate hydraulic systems are fitted to the harvester and have no interaction apart from the electrical control system.

Circuit 1. Auxiliary Hydraulics

The hydraulic ram services and discharge elevator drives are supplied with hydraulic oil from the tractor. A minimum supply of 35 litres/minute is fed through the pressure filter (*item 1, figure 25*) into the flow divider section of the auxiliary valve block (*item 2, figure 25*). The system will accept up to 63 litres/minute maximum. On demand a metered flow of 9 to 12 litres is fed through the ram service valves to operate the selected rams. The link valve (*item 3, figure 25*) allows both digger ram circuits to be operated simultaneously when selected on the in-cab control box. The balance oil flow is fed into the proportional valve (*item 4, figure 25*) which controls the discharge web, cross web and rear feed roller motors. The return oil flow from the valves and motors recombines and is returned to the tractor, ideally through a low back pressure or free flow return coupling. No separate relief valve is fitted to the circuit, the system relies totally on the tractor relief valve.



The manual override knob (item 5, figure 25) fitted to the elevator proportional valve should be wound fully out at all times. Failure to do so prevents the web being stopped from the control box.

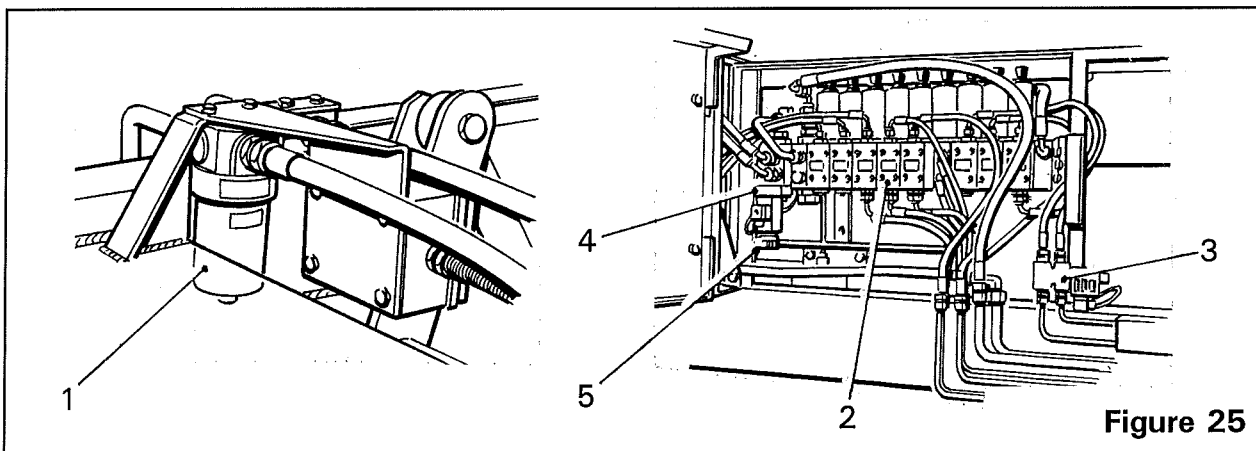


Figure 25

Circuit 2. Cleaner Unit Hydraulics

The hydraulic supply for the cleaner unit system is taken from the PTO driven pump (*item 1, figure 26*). The oil reservoir is integral within the front and left hand chassis beams and has a capacity of 180 litres. The feed into the pump is through the suction filter (*item 2, figure 26*) submerged in the rear face of the front beam.



When the machine is in use, the suction filter knob (item 3, figure 26) must be wound fully in clockwise at all times.

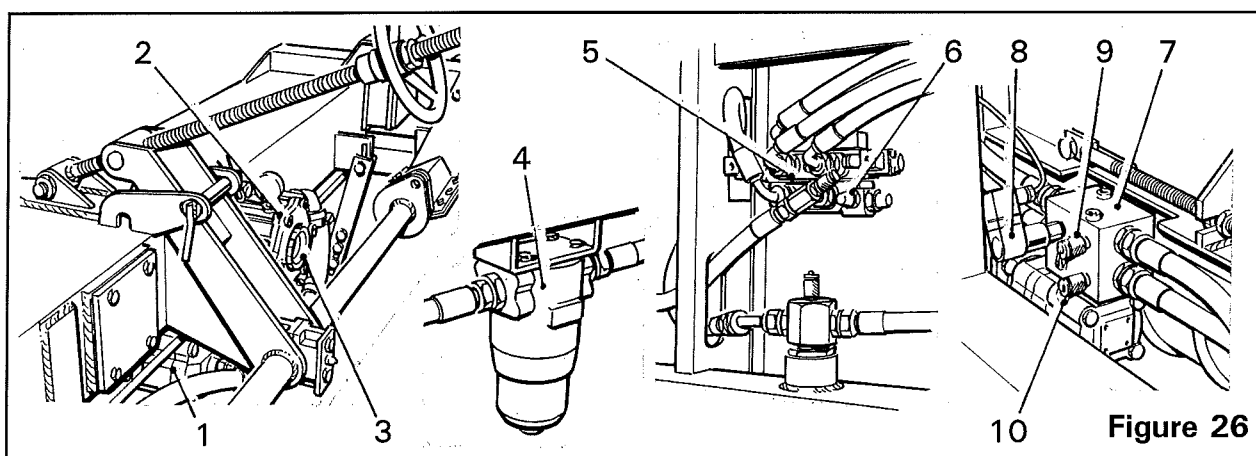
The oil flow from the pump (134 litres/minute at 540 PTO rpm) passes through the pressure filter (*item 4, figure 26*), mounted under the left hand side of the machine, into the cleaner unit proportional control valve (*item 5, figure 26*).

Also incorporated within the valve is the pressure relief valve (*item 6, figure 26*) which is preset at 170 bar.



The pressure relief valve (item 6, figure 26) is fitted to protect the hydraulic system should any major blockage occur. It is an essential safety feature preset at the factory and should never be tampered with.

From the proportional valve, the flow is taken to the left hand cleaner unit motor manifold block (*item 7, figure 26*) and then tee'd in parallel to the right hand motor. Fitted to the manifold block are the adjustable pressure switch (*item 8, figure 26*) which triggers the automatic reverse timer, and two pressure gauge ports (*item 9 & 10, figure 26*) which allow the system pressure to be measured in the forward and reverse lines respectively.



Manned Picking Table/Second Web Hydraulics

Optionally, the cleaner unit hydraulic circuit can be extended to incorporate a valve for running the the manned picking table option or hydraulically driven second web. To incorporate these options, the proportional valve block (*item 5, figure 26*) is replaced with a fully pressure compensated double proportional valve assembly. The cleaner control unit valve is mounted in parallel with a single acting proportional valve to run the option. To control the additional valve, a switch and control card are installed in the in-cab control box and connected to the wiring harness as shown in the electrical circuit diagram. To connect the hydraulics out of the additional valve, an extra tank return is connected to the chassis side beam. The valve and return ports can be closed with quick release couplings to allow the option to be connected without further breaking into the pipework of the hydraulic system.

Electrical Control System

Control for the major functions of the Standen Status are provided electronically by the switches mounted on the in-cab control box and harvester mounted control box.

The electrical system will only function as a completely connected circuit. The emergency stop button on the harvester rear control box completes a looped circuit and this circuit must be unbroken before the control box can be turned on or reset.

If the emergency stop button is tripped, the button must be reset before the in-cab control box will latch on.

Fuses rated at 15amps are fitted in the side of the control box. These ratings should not be exceeded as irreparable damage may be caused to the electrical system. Ensure that all plug and socket connections are clean and coupling pins undamaged before connection, and that they are securely locked together before the power is switched on.



Do not leave or store the control box outside in the open and always disconnect the control box from the tractor electrical supply when not in use, so avoiding the possibility of draining the battery.

**Checks Before Starting a New Machine,
Changing Tractor, or when Changing Field or Crop.**

1. Ensure that the harvester is level when hitched to the tractor.
2. Ensure that the hydraulic and electrical connections from the tractor are correctly made and are secure.
3. Ensure that the tractor and harvester wheel settings match the rows to be harvested.
4. Ensure that the shares are set to the correct row widths and are set centrally to the rows.
5. Set the shares so that they are evenly spaced and the tip plates are in line with the top of the digger web.
6. Ensure that the diablo rollers are mounted centrally over the rows.
7. Set the disc coulters to the correct width to suit the ridges being lifted, typically 2.5cm (1") from the outer edge of the share blade.
8. Ensure that the disc coulters are set parallel to each other.
9. Ensure that the disc coulters are sharp, especially in soft ground or trash.
10. Ensure that the haulm intake rollers are set to the correct width.
11. Check that the web pitch is suitable for the size of crop to be lifted.

Setting the Machine into Work

1. Set the machine into work, harvest about twice the length of the machine and then stop.
2. Dig into the lifted rows behind the machine to check the depth of work.

Cut potatoes in the ground may indicate that the machine is digging too shallow. Potatoes with an uneven cut are usually caused by the shares. Adjust the diablo depth turnbuckle. Clean cut potatoes at the side of the lifted rows may mean that the disc coulters are set too close to the sides of the share. Set the discs slightly wider. Check that the disc coulters are set to the correct depth, normally just above the bottom of the shares.

Uncut potatoes on the surface at the side of the machine may have rolled around the front of the discs, or off the front of the digger web. Set the discs and haulm intake rollers to contain the crop.

Excessive depth of digging will lift too much soil onto the harvester and cause separation problems (1/2" depth equates to 30 tons per acre). Set the diablo rollers to carry the shares just under the potatoes. Avoid digging into the unworked soil beneath the ridge.

Turn down the digger suspension handwheel until it is hard against the trunnion on the torsion bar.

3. Check the potatoes on the digger web.

Cut potatoes will indicate either too shallow digging or badly set discs. Excessive soil may indicate too deep digging. Reset accordingly.

Stones and clod at the side of the web may indicate that the discs and shares are set too wide causing material to be lifted out of the wheelings.

4. Look for undamaged potatoes laid randomly on the surface of the soil.

The size of these potatoes should be checked against the web pitches fitted to the machine and may indicate that narrower pitch webs or web rod rubber cover kits should be fitted.

Check other elements of the machine that may have forced potatoes through the webs. If set too close to the digger web, the sweeping clod fingers and rubber clod fingers may force potatoes through the web.

5. Look for crushed potatoes on the surface.

Especially if mixed with haulm and trash, crushed potatoes usually indicate that the haulm roller setting needs to be adjusted. The haulm roller may be set too high, the roller spring tension too weak, or the haulm fingers set too close to the roller, all of these points will cause potatoes to be pulled through the haulm roller. Check all of these settings and adjust until the correct setting is found.

In some crop conditions, it may help to vary the speed of the second web in order to pull the potatoes away from the back of the haulm roller. Alternative drive sprockets are available which can be fitted to the gearbox output shaft to change the web speed.

6. Check for nipped potatoes under the roller cleaner unit.

Changing the setting of the roller cleaner unit will normally eliminate the problem of potatoes being pulled through the rollers. The angle, speed and roller size can all be varied.

General Operating Hints

1. In dry or light soil conditions, it is beneficial to carry soil through to the roller cleaner unit.
2. Keep web agitation and crop movement to a minimum to obtain a clean sample.
3. Set the diablo roller and digger web suspension to exert the lightest pressure possible on the ridge while still maintaining crop flow, this will minimise bruising in the ridge.
4. Do not hold the crop on the cleaner unit longer than is necessary as this can encourage crop damage.
5. Run the discharge elevator at a speed which takes the crop away smoothly without waterfaling or throwing.
6. Operate the harvester smoothly and make adjustments logically, one at a time, until the optimum sample is achieved.

Maintenance of the Mechanical Drives

Drive chains and belts must be maintained at the correct tension. The various adjustments are detailed within this manual. Maintaining correct tension, alignment and lubrication will ensure the efficient running of the harvester and prolong the life of the drive components.

The input drive shaft from the tractor PTO should be checked for damage regularly and the inner and outer tubes checked to ensure a free sliding movement. Binding between the input drive shaft components will cause severe end loading on the gearbox input shaft leading to premature failure of the gearbox.

Maintenance of the Hydraulic Systems

The components utilised in the design of the hydraulic systems have been chosen for their maintenance-free characteristics. Should it be necessary to remove any of the hydraulic components, cleanliness is of the utmost importance. Before breaking any connection in the system, ensure that the surrounding area is clean. Pressure wash the machine if possible. Prevent contamination entering the system by plugging any open pipe work and ports with plastic plugs or clean paper wipes. Do not use cloth or rags. Preventing contamination entering the system will prolong the life of the various hydraulic components and will help prevent component failure.



Hydraulic oil under pressure is dangerous. Ensure that any residual pressure is released safely before working on the system. Do not release ram hoses without first supporting the part of the machine the ram controls.



Remember that the tractor hydraulic oil supply serves the machine. Ensure that the tractor hydraulic system is serviced in accordance with the manufacturers recommendations to prevent cross contamination of the harvester auxilliary system.

To extend the life of the cleaner unit hydraulic system, the hydraulic oil should be carefully monitored. The hot oil level should be kept at approximately 15mm above the bottom of the chassis mounted filler neck (*item 1, figure 27*). Maintain the filler level by topping up or refilling with Esso Nuto 46 Hydraulic Oil. The reservoir holds approximately 180 litres (40 gallons).

If a high water content becomes apparent or a cloudiness in the oil, the hydraulic oil should be changed.

The oil reservoir magnetic plug (*item 2, figure 27*) should be removed and cleaned annually. This plug is also used to drain the reservoir, so if the oil is not being changed a temporary 3/4" BSP plug should be used to seal the tank and minimise oil loss.

Regularly check all hoses for chafing or accidental damage and replace immediately.

The pressure filter elements (*item 1, figure 25 & item 4, figure 26*) should be replaced after the first 50 hours running time and then every 500 hours or annually thereafter. Subsequently the filter elements should be replaced if the indicators show that the elements are becoming blocked.

To replace a pressure filter element:

1. Switch off the tractor engine and apply the hand brake.
2. In the case of the auxilliary circuit pressure filter, operate the spool valve feeding the harvester to release any residual pressure and then disconnect the feed hose from the tractor.
3. Unscrew the bottom casing of the filter housing.
4. Remove the filter element and rinse out the casing.
5. Fit the new element and refit the casing ensuring that it is tight.
6. Run the system and check for leaks.

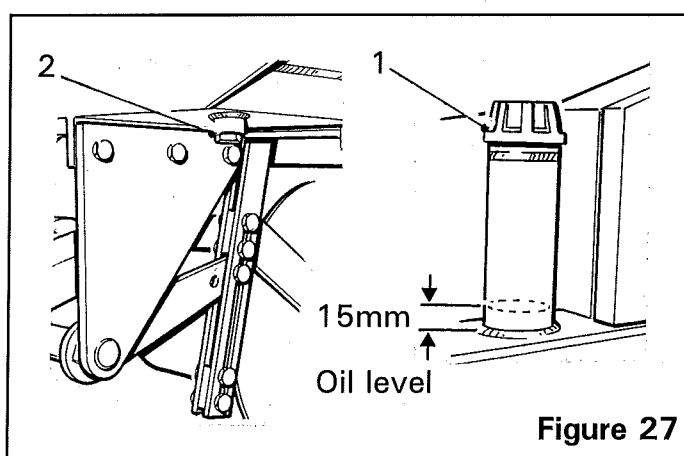


Figure 27

The suction filter element (*item 2, figure 26*) should be replaced after the first 50 hours running time and then every 500 hours or annually thereafter. Subsequently the filter element should be cleaned or replaced if the indicator shows that the element is becoming blocked.

The suction filter element is serviced as follows:

1. Wind the suction filter knob (*item 3, figure 26*) fully out anti-clockwise to close the cut off valve within the filter housing.
2. Release the screws holding the filter lid. A small amount of oil will be lost from the filter body.
3. Remove the top of the filter and withdraw the element.
4. Clean or replace the element and reassemble.
5. Wind the suction filter knob (*item 3, figure 26*) fully in clockwise to open the cut off valve.
6. Run the system and check for leaks.

Maintenance of the Electrical Control System

Trouble shooting of the control system must be carried out by a competent engineer familiar with electrical servicing. Items such as the proportional valve control cards may be damaged if incorrectly connected.

The basic test to confirm an electrical fault if a service does not operate, is to try to operate the service using the manual override knobs fitted to the hydraulic valve block. If the service operates manually, then checks should be made to see if power is reaching the relevant solenoid on the valve. If the service does not operate manually, then it is possible the fault lies within the hydraulic system.

Speed Control Card Setting Procedure

The minimum and maximum speed of the discharge elevator, cleaner unit and manned picking table are factory set on the control cards inside the incab control box. Should it be necessary to reset the control cards, the following procedure must be followed.

1. To set the minimum speed.

With the motor running and the relevant speed control knob turned just on (number 1 on the decal), adjust the screw marked 'P2' (see figure 28) to decrease the speed until the required minimum speed is obtained.

2. To set the maximum speed.

With the motor running and the relevant speed control knob turned to maximum (number 10 on the decal), adjust the screw marked 'P3' (see figure 28) until the required maximum speed is obtained.

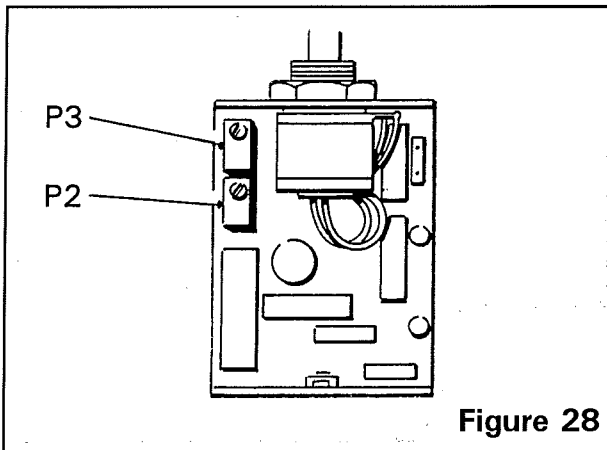


Figure 28

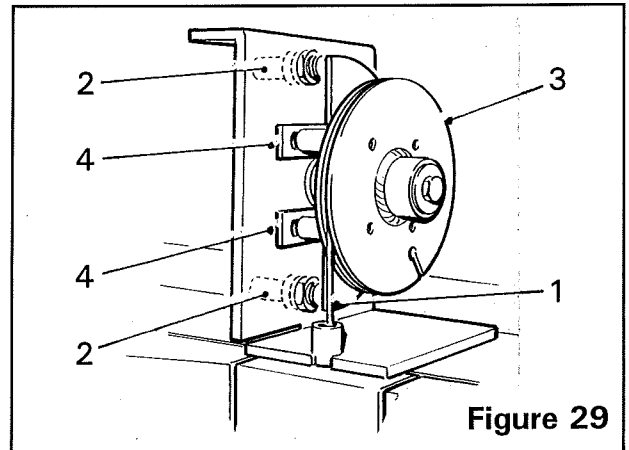


Figure 29

Setting the Rear Axle Self-centring Mechanism

The rear axle self-centring mechanism is combined with the wheel position indicator and is used to bring the harvester wheels back to the straight ahead position after manoeuvring. The centre position is factory-set but may need to be adjusted after a period of service.

Should the cable (item 1, figure 29) become slack, then the axle will centre from either side to a right hand bias. To correct the centre position, the cable can be retensioned by means of the cable adjuster on the axle ram mounting.

Release the locknuts and, holding the head of the cable adjuster, wind the nuts until the axle returns to the straight ahead position when operated. Retighten the locknuts fully when the correct position is reached.

The setting of the proximity switches (*item 2, figure 29*) in the position indicator will only need adjusting if the unit has been dismantled for any reason and should be carried out by a competent service engineer.

The setting sequence for the indicator unit is as follows and must be followed through in order:

1. Manually set the wheels in the straight ahead position checking that the right hand wheel is parallel to the side of the chassis at the front and back of the tyre.
2. Remove the guard and check that the cable wheel (*item 3, figure 29*) is in the vertical position as indicated by the coloured arrow.
3. If the arrow is not vertical, rotate the cable wheel by hand against the spring until the arrow is vertical and clamp it in position with a pair of grips.
4. Release the cable clamp on the drag link and wind the cable adjuster to the midway position by turning the locknuts.
5. Pull the cable tight and retighten the cable clamp.
6. Unclamp the cable wheel and, by fine positioning of the cable adjuster, position the arrow to vertical.
7. With an assistant holding down the self-centre button on the control box, both light bands on the proximity switches (*item 2, figure 29*) should be off.
8. Keeping the self-centre button held down, release the switch plates (*item 4, figure 29*) by slackening the bolts.
9. Slide the vertical edge of the upper plate towards the outside of the machine until the light band on the proximity switch illuminates, then move the switch plate back until the light just goes out and lock the plate in position. Repeat with the bottom plate. If the proximity switch does not illuminate, it may need to be moved closer to the switch plate by adjusting the switch body locknuts. Ensure that the proximity switch does not touch the plate when everything is tight. A clearance of approximately 1mm should be set between the switch plate and the face of the proximity switch.
10. Check the centre position of the wheels returning from both left and right lock and fine tune this position by adjusting the relevant switch plate. The upper switch plate will be seen to cover the top proximity switch on left hand lock and the lower on right. The point at which the light band goes off is the point where the ram stops moving.

Note: At no time should both proximity switches light up together. A neutral band must always be present where both switches are off.

11. Refit the guard and check that the cable is correctly tightened at the axle end.

Setting the Automatic Depth Control

The depth control unit allows each roller to sense the height of the ridge it is running on and in doing so, maintains the constant depth of the share below the top of the ridge. The depth control unit senses the position of the depth adjusting turnbuckle (item 3, figure 7). The proximity switches (item 1, figure 30) are factory-set but may need to be adjusted after a period of service.

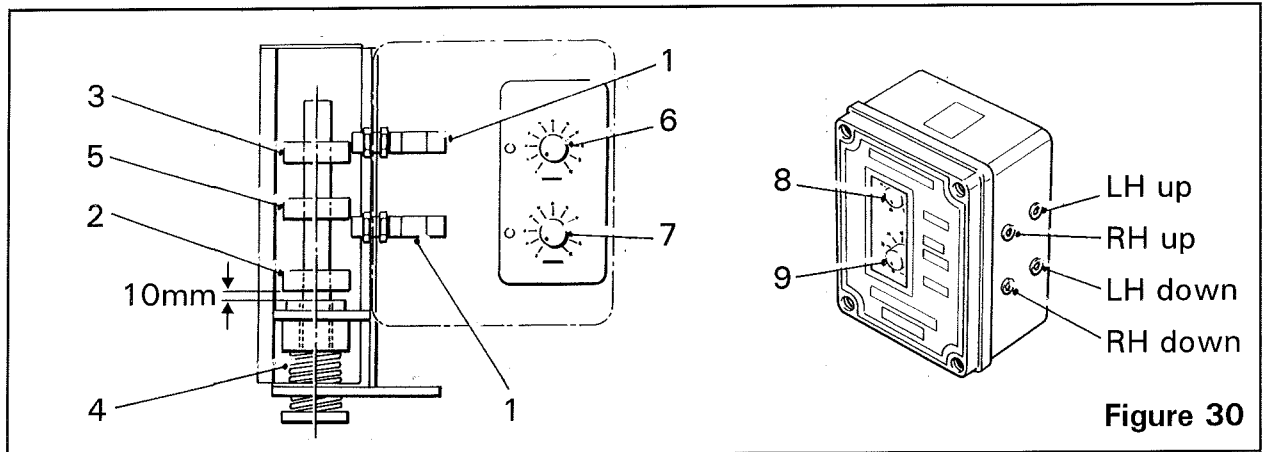


Figure 30

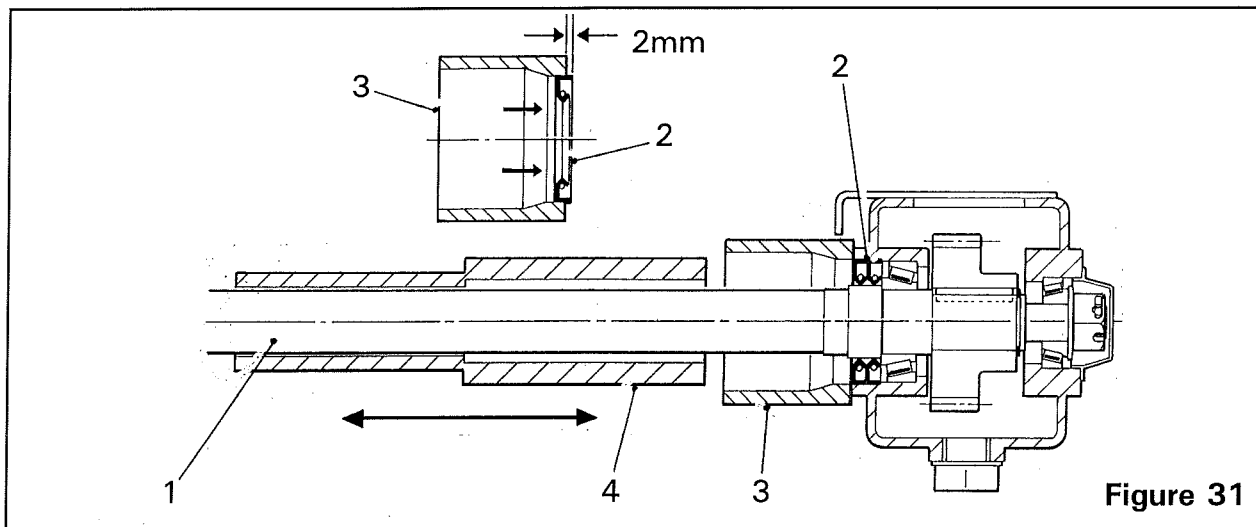
The setting sequence for the depth control unit is as follows and must be followed through in order:

1. Remove the guard by slackening the two bolts and then slide the guard forward.
2. Open the lid of the depth control box by releasing the two set screws. Push and twist 90° to release.
3. With the turnbuckle (item 3, figure 7) at the top of the slot in the reaction bracket, the spring stop (item 2, figure 30) can be set. Release the grub screws and move the spring stop disc until a gap of 10mm is obtained between the stop and the bush housing (see figure 30). Retighten the grub screws.
4. With the turnbuckle still at the top of the slot, the top stop can be set.

DO NOT START THE TRACTOR. Set the digger share switch to 'Auto' and the left digger share switch to 'Lower', this puts power into the depth control circuit. Release the grub screws on the top stop disc (item 3, figure 30) and move the disc until the light band on the upper proximity switch turns on. Retighten the grub screws. If needed, the proximity switch can be moved closer to the edge of the disc by releasing the proximity switch locknuts and setting the switch to a distance of approximately 1mm.

5. Lower the turnbuckle from the top of the slot until the spring (item 4, figure 30) holds the spring stop (item 2, figure 30) onto the bush housing.
6. The lower stop disc (item 5, figure 30) is then adjusted until the bottom edge of the disc turns on the light band on the lower proximity switch. Refit the guard.

7. Finally, set the timers to give the required delay. On early machines the LH and RH depth control boxes each contain a 'raise' timer (*item 6, figure 30*) and a 'lower' timer (*item 7, figure 30*). On later machines the single depth control box positioned above the RH roller contains two 'raise' timers only. The top timer (*item 8, figure 30*) is activated by the RH roller and the bottom timer (*item 9, figure 30*) is activated by the LH roller. Initially, the 'raise' timers should be set to give a 5 second delay. During work, the 'raise' timers can be adjusted so that the digger does not lift out of work when sensing sudden variations, but only rises to give a constant depth. The 'lower' timers (*item 7, figure 30*), fitted to early machines only, should normally be set at minimum.



Cleaner Unit Oil Seal Replacement

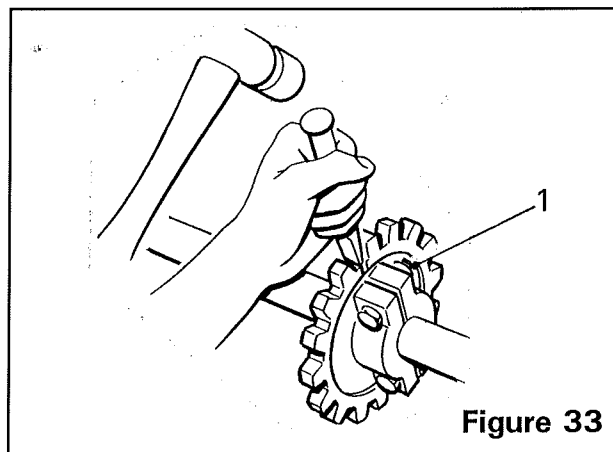
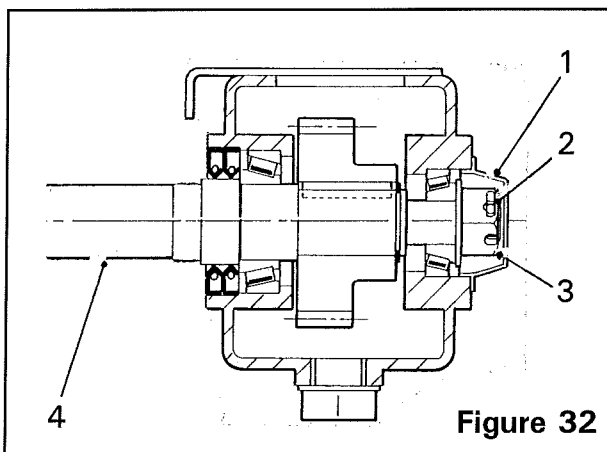
The cleaner unit roller shafts (*item 1, figure 31*) are each fitted with an oil seal (*item 2, figure 31*) which is press fitted into the gearbox casing. The seals prevent loss of oil from the gearbox and also prevent the ingress of dirt. If leakage is apparent, the seals can be replaced in situ by using the guide sleeve and slide hammer service kit.

1. Remove the roller and clean the loose soil and any other material from around the gearbox face.
2. Prise out the worn seal (*item 2, figure 31*) taking care not to damage the seal aperture in the gearbox. Clean the seal aperture and the surrounding face of the gearbox.
3. Grease the inner and outer faces of the new seal and grease the inside of the seal aperture.
4. Push the new seal into the compression ring (*item 3, figure 31*) until the seal protrudes approximately 1-2mm beyond the ring face. Slide the compression ring complete with seal over the roller shaft (*item 1, figure 31*) and locate the seal into the aperture.
5. Locate the slide hammer (*item 4, figure 31*) over the roller shaft and, holding the compression ring and seal firmly against the gearbox face, bump the seal into the gearbox. If required, a second seal can be fitted behind the first to give additional backup.

Tightening the Cleaner Unit Bearings

If excessive play can be felt at the end of a roller shaft (1-1.5cm), the rubber roller should be removed to ensure that it is not a loose fitting roller that can be felt and then, if necessary, the bearings adjusted as follows.

1. Clean the loose soil from around the gearbox face and prise out the end cap (*item 1, figure 32*).
2. Remove the split pin (*item 2, figure 32*) from the castellated nut (*item 3, figure 32*) and tighten the nut to a torque of 22lb/ft.
3. Check the roller shaft (*item 4, figure 32*) again for free play.
4. Refit the split pin (*item 2, figure 32*) in the next clear hole, tightening the nut a maximum of one flat if needed.
5. Smear the end cap mating face with an oil resistant silicon sealer and tap the cap back into place.



Split Web Drive Sprockets

Split web drive sprockets are fitted as standard on all of the web drive shafts. The sprockets allow for worn sprockets to be replaced or alternative pitch sprockets to be fitted without dismantling the drive shafts.

Most drive sprockets will have been split on initial installation, but if not, they should be split with a hammer and sharp chisel. Before splitting a sprocket, on or off the machine, remove the fixing bolts (*item 1, figure 33*). Keep the split halves of the sprockets in the correct pairs to prevent mis-match when fitting.

Lubrication

Regular lubrication will ensure that the Standen Status provides a long and efficient service life. Depending on soil and weather conditions, the service schedule can vary. It is recommended that the harvester is given a thorough inspection at least weekly during the working season and at this time the machine should be greased and the gearbox oil levels checked.

Shafts and bearings fitted with grease nipples should be lubricated using a good quality general purpose grease. Bearings must not be allowed to run dry. When greasing it is better to give a little frequently than a lot a long intervals.

Note: With reference to the lubrication chart (*see figure 34*), some of the bearings are sealed and pre-lubricated. Care should be taken not to flood these bearings with grease or the seals may burst allowing grease to escape and dirt to get in. Should this happen, more frequent greasing will be required in order to keep the dirt at bay. When lubricating sealed bearings, only two strokes of the grease gun every twenty acres of work is necessary.

The non-sealed bearings should be greased at least once a day or every ten acres.

When checking the chain and gear drives, proprietary chain lubricant or a smear of grease should be applied to prolong their life.

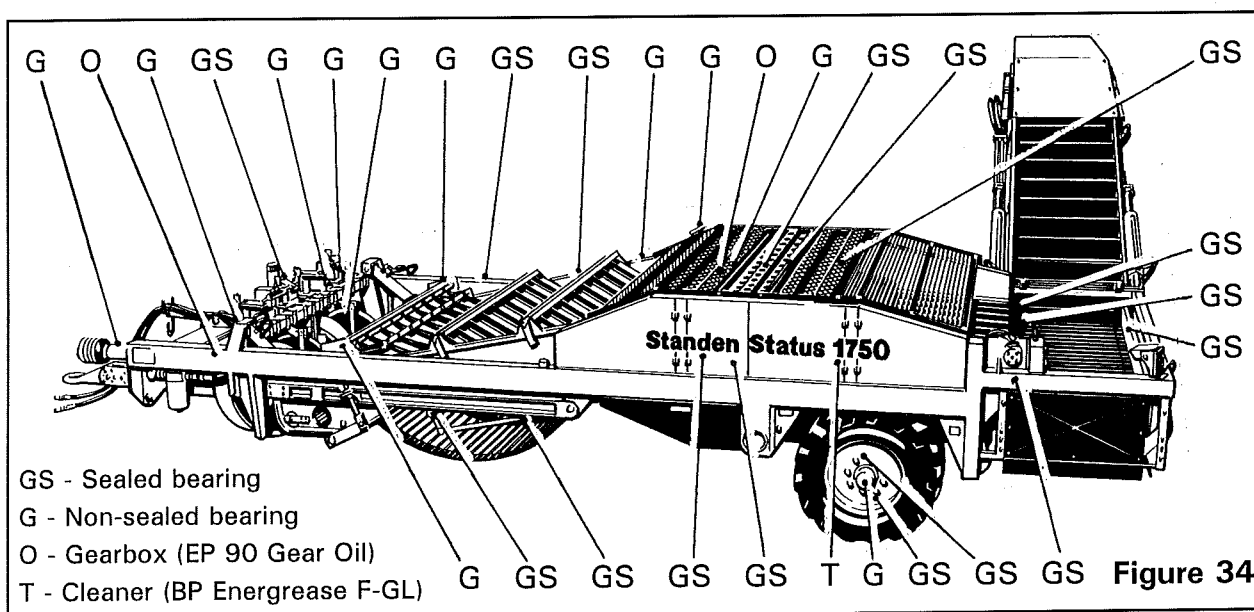
The gearboxes should be checked occasionally and topped up with EP 90 gear oil.

The cleaner unit gearcase should be checked regularly and topped up with BP Energrease F-GL.

The universal couplings (such as the PTO shaft) should be dismantled periodically and their shafts smeared with grease.

Apply grease to all pivot points, slideways and exposed threads etc to ensure they operate easily and remain free of corrosion.

Particular care must be taken to ensure that grease or oil does not come into contact with the 'V'belts or slip clutches.



Service Schedule**On delivery and after the first 2 hours**

Nuts, bolts and keyways	Check tightness
Machine	Lubricate

Every day (or every 10 acres)

Hydraulic oil	Check level
Nuts, bolts and keyways	Check tightness
Non-sealed bearings	Lubricate
Hydraulic hoses and fittings	Check condition
Machine components	Check condition

Every two days (or every 20 acres)

Sealed bearings	lubricate
Chain drives	Check tension and lubricate

After the first 50 hours

Pressure filters	Replace filter element
Suction filter	Clean or replace filter element

Every 500 hours (or annually)

Pressure and suction filters	Replace filter element
Hydraulic oil	Change
Magnetic drain plug	Clean

End of the season

Machine	Clean down thoroughly
Machine components	Check condition
Machine	Lubricate
Bright surfaces	Treat with rust preventative
Paintwork	Touch up
Slip clutches	Slacken off
Machine	Store in a dry place
Control box	Remove and store in a dry place

Nut/Bolt Tightening Torque

<i>Description</i>	<i>Torque</i>		<i>Description</i>	<i>Torque</i>
M6 nyloc zinc plated nut	10lb/ft		M6 bolt/steel nut	7lb/ft
M8 nyloc zinc plated nut	23lb/ft		M8 bolt/steel nut	19lb/ft
M10 nyloc zinc plated nut	44lb/ft		M10 bolt/steel nut	38lb/ft
M12 nyloc zinc plated nut	87lb/ft		M12 bolt/steel nut	70lb/ft
M16 nyloc zinc plated nut	208lb/ft		M16 bolt/steel nut	170lb/ft
M20 nyloc zinc plated nut	380lb/ft		M20 bolt/steel nut	325lb/ft
M24 nyloc zinc plated nut	690lb/ft		M24 bolt/steel nut	565lb/ft

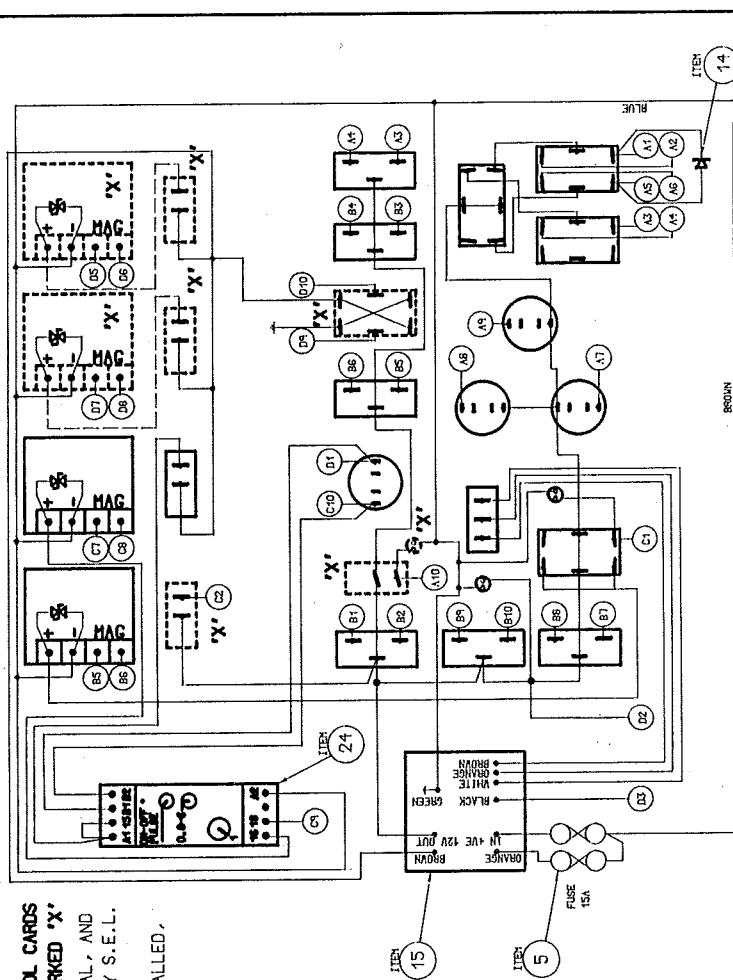
Dimensions	Unmanned	Manned
Length	9.50m	10.1m
Width (in transport)	2.90m	3.28m
Height (in transport)	3.20m	3.20m

Technical Data

Weight	6.5 tonnes	7.0 tonnes
Tractor hp requirement	100hp min.	120hp min.
Tractor hydraulic flow rate	35 litres/minute min.	35 litres/minute min.
Hydraulic pump flow rate (at 540 PTO rpm)	134 litres/minute	134 litres/minute
Oil reservoir capacity (Esso Nuto 46 Hydraulic Oil)	180 litres	180 litres
Tyre pressure	36psi	36psi
Wheel nut torque	185lb/ft	185lb/ft

Standen Engineering's policy of continual product development means that specifications may be altered without prior notice. All dimensions are approximate.

N.B. SPEED CONTROL CARDS
AND SWITCHES MARKED "X"
THESE ARE OPTIONAL, AND
WILL BE FITTED BY S.E.L.
WHEN REQUIRED.
WIRES TO BE INSTALLED.



REAR VIEW OF PANEL SHOWING WIRING CONNECTIONS.

N.B. WIRE COLOURS MUST BE MAINTAINED FOR TRACEABILITY

N.B. WIRE COLOURS NOT TO BE INTERPRETIVE!!									
ITEM	PART NO	DESCRIPTION	DETAIL	QTY	ITEM	PART NO	DESCRIPTION	DETAIL	QTY
1	27467	DN / OFF SWITCH	SP: ST.	1	18	42178	CONTROL BOX LID		1
2	27468	2-WAY SPRING CENTRE	SP-DT: CENTRE BLAS OFF	6	19	42179	CONTROL BOX LID		1
3	36860	PUSH BUTTON	N.O. RED TOP	2	20	42180	CONTROL BOX HINSE		1
4	37073	SHAKE LIFT SWITCH.	DP-DT:COF: LATCH ONE WAY	2	21	42181	CONTROL BOX SCREW		4
5	37104	FUSE HOLDER	FUSE 15A	2	22	42182	SCREW CLIP		4
6	37149	L.E.D.	RED.	3	23	42182.136	MOUNTING MAGNET		1
7	42207	AUTO/ANNUAL SWITCH	DP: CHANGE OVER.	1	24	42063	TIMER RELAY		1
8	57278	ELEVATOR SWITCH.	DP-DT:COF: LATCH BOTH WAYS	1	25	178274	TRANSFERS		1
9	42208	ROOM BREWER SWITCH	DP-DT: CENTRE BLAS OFF	1	26	375271	NUMBERS CAP		10
10	37280	ROCKER SWITCH	SP-DT: ST.	4	27	42276	BLANKING PLUG	12x19	4
11	37272.1	SPEED CONTROL CARD		2	28	42277	BLANKING PLUG	8mm	3
12	42209	RESET ROCKER SWITCH	SP-DT	1	29	42278	BLANKING PLUG	30 X 15	1
13	36862	PUSH BUTTON	N.O. YELLOW TOP	2	30	22071004.10	M X 10 SCREW	SLOT /PAN HEAD	6
14	16667	DIODE	6 AMP (PIN)	1	31	220270004	PHX NUT		6
15	42210	5-STOP RELAY		1					
16	42211	40 PIN SOCKET BASE		1					
17	42212	40 PIN SOCKET INSERT		1					

4	ISSUE	DATE	CHANGE	REASON	DRAWN	APPROVED
MATERIAL						
AS PARTS LIST						
PART NO				DRAWING NO		
42204				E42204		

1. THIRD ANGLE PROJECTION
DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED
GEN. TOL. FRACTIONS $\geq 1mm$, DECIMALS $\geq 0.1mm$ UNLESS OTHERWISE SPECIFIED
5 REMOVE ALL SHARP EDGES
DO NOT SCALE
IF IN DOUBT ASK

DISCHARGE WIND SPEED	DISCHARGE WIND	SNO WIND/TABLE	CLAMPER SPEED	CROSS ELEVATOR	CLAMPER ELEVATOR	CLAMPER SPEED	CROSS ELEVATOR
STOP	STOP	STOP	STOP	STOP	STOP	STOP	STOP
DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN
UP	UP	UP	UP	UP	UP	UP	UP

Standen Status

DISCHARGE WIND SPEED	DISCHARGE WIND	SNO WIND/TABLE	CLAMPER SPEED	CROSS ELEVATOR	CLAMPER ELEVATOR	CLAMPER SPEED	CROSS ELEVATOR
STOP	STOP	STOP	STOP	STOP	STOP	STOP	STOP
DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN
UP	UP	UP	UP	UP	UP	UP	UP

Standen Status

DISCHARGE WIND SPEED	DISCHARGE WIND	SNO WIND/TABLE	CLAMPER SPEED	CROSS ELEVATOR	CLAMPER ELEVATOR	CLAMPER SPEED	CROSS ELEVATOR
STOP	STOP	STOP	STOP	STOP	STOP	STOP	STOP
DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN	DOWN
UP	UP	UP	UP	UP	UP	UP	UP

CONTROL BOX FACIA SHOWING SWITCH REFERENCE NUMBERS AND LOCATIONS.

PIN NO	COLOR	FUNCTION	SIZE	PIN NO	COLOR	FUNCTION	SIZE
A. 1	RED	LEFT DICER LIFT	16/0.2	C. 2	BLUE	CROSS ELEVATOR VINDROW	16/0.2
A. 2	BLUE	LEFT DICER LOWER	16/0.2	C. 3	GRAY	ACTIVATION INCREASE	16/0.2
A. 3	GRAY	RIGHT DICER LIFT	16/0.2	C. 4	YELLOW	ACTIVATION DECREASE	16/0.2
A. 4	YELLOW	RIGHT DICER LOWER	16/0.2	C. 5	WHITE	CLEANER ANGLE RAISE	16/0.2
A. 5	WHITE	RIGHT DICER LIFT	16/0.2	C. 6	BLACK	CLEANER ANGLE LOWER	16/0.2
A. 6	BLACK	AUTO DICER LOWER	16/0.2	C. 7	BROWN	CLEANER FORWARD COIL	24/0.2
A. 7	BROWN	AUTO DICER LIFT	16/0.2	C. 8	VIOLET	CLEANER FORWARD COIL	24/0.2
A. 8	VIOLET	AXLE STEER LEFT	16/0.2	C. 9	ORANGE	CLEANER REVERSE COIL	16/0.2
A. 9	ORANGE	AXLE STEER RIGHT	16/0.2	C. 10	PINK	ANNUAL REVERSE LOOP	16/0.2
A. 10	PINK	AXLE STEER AUTO CENTRE	16/0.2	D. 1	GREEN/RED	ANNUAL REVERSE LOOP	16/0.2
B. 1	WHITE/BLACK	AUTO MACHINE LEVEL	16/0.2	D. 2	YELLOW/RED	EMERGENCY STOP LOOP	16/0.2
B. 2	VIOLET/BLACK	MACHINE LEVEL RAISE	16/0.2	D. 3	YELLOW/GREEN	EMERGENCY STOP LOOP	16/0.2
B. 3	RED/GREEN	MACHINE LEVEL LOWER	16/0.2	D. 4	YELLOW/BLACK	12VOLT. A/C FEED	16/0.2
B. 4	RED/BROWN	DRAWBAR STEER LEFT	16/0.2	D. 5	RED	MAIN VEB COIL	24/0.2
B. 5	RED/BLUE	DRAWBAR STEER RIGHT	16/0.2	D. 6	BLACK	MAIN VEB COIL	24/0.2
B. 6	RED/BLACK	ELEVATOR VALVE COIL	16/0.2	D. 7	ORANGE	SECOND VEB COIL	24/0.2
B. 7	PINK/BLACK	ELEVATOR RAISE	16/0.2	D. 8	YELLOW	SECOND VEB COIL	24/0.2
B. 8	ORANGE/RED	ELEVATOR LOWER	16/0.2	D. 9	BLUE	CLOD BREAKERS RAISE	24/0.2
B. 9	ORANGE/BLACK	ELEVATOR IN	16/0.2	D. 10	VIOLET	CLOD BREAKERS LOWER	24/0.2
B. 10	GRAY/BLUE	ELEVATOR OUT	16/0.2		GREEN/YELLOW	EMPTY	24/0.2

STANDEX ENGINEERING LIMITED	STATUS	DATE	SCALE
REPAIR WORKS, HARVEY ROAD, ELY CAMBS.	ELECTRICAL		
COX 48P ENGLAND.	CONTROL BOX ASSY		

[illegible]

ITEM	PART No	DESCRIPTION	MATERIAL	QTY
1	42213	40 PIN PLUG HOOD		1
2	42214	40 PIN PLUG INSERT		1
3	42216	4 PIN RECEPTACLE		7
4	42218	14 PIN RECEPTACLE		1
5	42220	RELAY BLOCK		1
6	27189	HIERSCAN PLUG		12
7	37536	37 PIN SOCKET		1
8	37595	37 PIN PLUG		1

IN NO.	4N PIN NO.	COLOR	FUNCTION	SIZE
1	1	WHITE	CLEANER RISE	16-0.2
2	2	BLACK	CLEANER LOWER	16-0.2
3	3	PINK	MANUAL REVERSE LOOP	16-0.2
4	4	GREEN/RED	MANUAL REVERSE LOOP	16-0.2
5	5	YELLOW/BLACK	POWER 220 V/4E	16-0.2
6	6	GREEN/YELLOW	EARTH	16-0.2
7	7	YELLOW/RED	EMERGENCY STOP LOOP	16-0.2
8	8	YELLOW/GREEN	EMERGENCY STOP LOOP	16-0.2
9	9	GREEN/YELLOW	EARTH	21-0.2
10	10	BROWN	CLEANER FORWARD COIL	16-0.2
11	11	VIOLET	CLEANER FORWARD COIL	16-0.2
12	12	ORANGE	CLEANER REVERSE COIL	16-0.2
13	13	ORANGE	SECOND WEB COIL	21-0.2
14	14	YELLOW	SECOND WEB COIL	21-0.2

ST	PIN	COLOR	FUNCTION	SIZE	PIN NO.	ST	PIN	COLOR	FUNCTION	SIZE
1	RED	BLACK	LEFT DIGGER LEFT	16/0.2	C. 2	21	GRAY	BLACK	CROSS ELEVATOR MOTOR	16/0.2
2	BLUE	BLACK	LEFT DIGGER LOWER	16/0.2	C. 3	22	BLUE	GRAY	ACTIVATION INCREASE	16/0.2
3	GRAY	BLACK	RIGHT DIGGER LEFT	16/0.2	C. 4	23	YELLOW	BLACK	ACTIVATION INCREASE	16/0.2
4	5	WHITE	RIGHT DIGGER LOWER	16/0.2	C. 5	24	WHITE	BLACK	CLEANER ANGLE RAISE	16/0.2
5	4	WHITE	RIGHT DIGGER LEFT	16/0.2	C. 6	25	BLACK	BLACK	CLEANER ANGLE LOWER	16/0.2
6	6	BROWN	AUTO DIGGER LOWER	16/0.2	C. 7	26	BROWN	BLACK	CLEANER FORWARD COIL	24/0.2
7	7	VIOLET	AUTO DIGGER LEFT	16/0.2	C. 8	27	VIOLET	BLACK	CLEANER FORWARD COIL	24/0.2
8	8	GRASS	ANGLE STEER RIGHT	16/0.2	C. 9	28	PINK	BLACK	CLEANER REVERSE COIL	16/0.2
9	9	PINK	AUTO MACHINE LEVEL	16/0.2	D. 1	30	GREEN/RED	BLACK	MANUAL REVERSE LOOP	16/0.2
10	10	WHITE/BLACK	MACHINE LEVEL RAISE	16/0.2	D. 2	31	YELLOW/RED	BLACK	EMERGENCY STOP LOOP	16/0.2
11	11	VIOLET/RED	MACHINE LEVEL LOWER	16/0.2	D. 3	32	YELLOW/BLACK	BLACK	EMERGENCY STOP LOOP	16/0.2
12	12	RED/BLACK	DRUMS STEER LEFT	16/0.2	D. 4	33	YELLOW/BLACK	BLACK	12VOLT AIR FEED	16/0.2
13	13	RED/BLACK	DRUMS STEER RIGHT	16/0.2	D. 5	34	RED	BLACK	MAIN VIB COIL	24/0.2
14	14	RED/BLUE	ELEVATOR VALUE COIL	16/0.2	D. 6	35	BLACK	BLACK	MAIN VIB COIL	24/0.2
15	15	RED/BLACK	ELEVATOR VALUE COIL	16/0.2	D. 7	36	GRASS	BLACK	SECOND VIB COIL	24/0.2
16	16	PINK/BLACK	ELEVATOR LOWER	16/0.2	D. 8	37	YELLOW	BLACK	SECOND VIB COIL	24/0.2
17	17	ORANGE/RED	ELEVATOR LOWER	16/0.2	D. 9	38	BLUE	BLACK	CLAD BREAKERS RAISE	24/0.2
18	18	ORANGE/BLACK	ELEVATOR IN	16/0.2	D. 10	39	ORANGE	BLACK	CLAD BREAKERS LOWER	24/0.2
19	19	GRAY/BLUE	ELEVATOR AUTO	16/0.2	D. 11	40	GRASS	BLACK	CLAD BREAKERS LOWER	24/0.2
20	20	GRAY/BLUE	ELEVATOR AUTO	16/0.2	D. 12	41	ORANGE	BLACK	EARTH	24/0.2

STANCO ENGINEERING LIMITED HERSHARD WORKS, STATION ROAD, ELY, CAMBS.	TELEGRAMS AND TELEPHONE	STATUS	DRAWN	R. CABORN.	THIRD ANGLE PROJECTION DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED GEN. TOL. FRACTIONS ±.1mm, DECIMALS ±.0.1mm UNLESS OTHERWISE SPECIFIED REMOVE ALL SHARP EDGES DO NOT SCALE IF IN DOUBT ASK	MATERIAL
		ASSEMBLY	DATE	8 FEB 95		SEE PARTS LIST
		DESCRIPTION	SCALE	1/1	PART NO	DRAWING NO
		MAIN LOOM ASSY			42205	E42205

[illegible]

ITEM	PART NO	DESCRIPTION	QTY	DETAIL	PART NO	DESCRIPTION	QTY	DETAIL	QTY
1	27467	ON / OFF SWITCH	1	18 42766	CONTROL BOX LID	1			1
2	42764	PUSH BUTTON	2	20 42180	CONTROL BOX HOSE	1			1
3	37073	SHAKE LIFT SWITCH	2	21 42181	CONTROL BOX HOSE	1			1
4	37189	FUSE HOLDER	2	22 42182	SOCKET CLIP	4			4
5	37190	L.E.D.	1	23		4			4
6	42807	AUTOMANUAL SWITCH	1	24 42863	TIMER RELAY	1			1
7	37278	CLID BREAKER SWITCH	1	25 12855	TRANSFER	1			1
8	42808	CLID BREAKER SWITCH	1	26 37527	RUBBER CAP	8			8
9	37280	ROCKER SWITCH	1	27 42876	BLANKING PLUG	4			4
10	37272/1	SPEED CONTROL CARD	2	28		4			4
11	42763	JOYSTICK SWITCH	4	29 42278	BLANKING PLUG	2			2
12	42765	PUSH BUTTON	1	30					
13	16267	DIODE	4	31					
14	42766	ESTOP RELAY & BASE	1						
15	42766	ESTOP RELAY & BASE	1						
16	42211	SOCKET BASE 40 PIN	1						
17	42212	SOCKET INSERT 40 PIN	1						

REAR VIEW OF PANEL SHOWING WIRING CONNECTIONS.
N.B. WIRE COLOURS MUST BE MAINTAINED FOR TRACEABILITY.

N.B. SWITCHES MARKED 'X' ARE OPTIONAL AND FITTED BY SEL. WHEN REQUIRED. ALL WIRES TO BE FITTED.

CHASSIS
12 VOLT -VE

FUSES 15A

ITEM	PART NO	DESCRIPTION	QTY	DETAIL	PART NO	DESCRIPTION	QTY	DETAIL	QTY
1	27467	ON / OFF SWITCH	1	18 42766	CONTROL BOX LID	1			1
2	42764	PUSH BUTTON	2	20 42180	CONTROL BOX HOSE	1			1
3	37073	SHAKE LIFT SWITCH	2	21 42181	CONTROL BOX HOSE	1			1
4	37189	FUSE HOLDER	2	22 42182	SOCKET CLIP	4			4
5	37190	L.E.D.	1	23		4			4
6	42807	AUTOMANUAL SWITCH	1	24 42863	TIMER RELAY	1			1
7	37278	CLID BREAKER SWITCH	1	25 12855	TRANSFER	1			1
8	42808	CLID BREAKER SWITCH	1	26 37527	RUBBER CAP	8			8
9	37280	ROCKER SWITCH	1	27 42876	BLANKING PLUG	4			4
10	37272/1	SPEED CONTROL CARD	2	28		4			4
11	42763	JOYSTICK SWITCH	4	29 42278	BLANKING PLUG	2			2
12	42765	PUSH BUTTON	1	30					
13	16267	DIODE	4	31					
14	42766	ESTOP RELAY & BASE	1						
15	42766	ESTOP RELAY & BASE	1						
16	42211	SOCKET BASE 40 PIN	1						
17	42212	SOCKET INSERT 40 PIN	1						

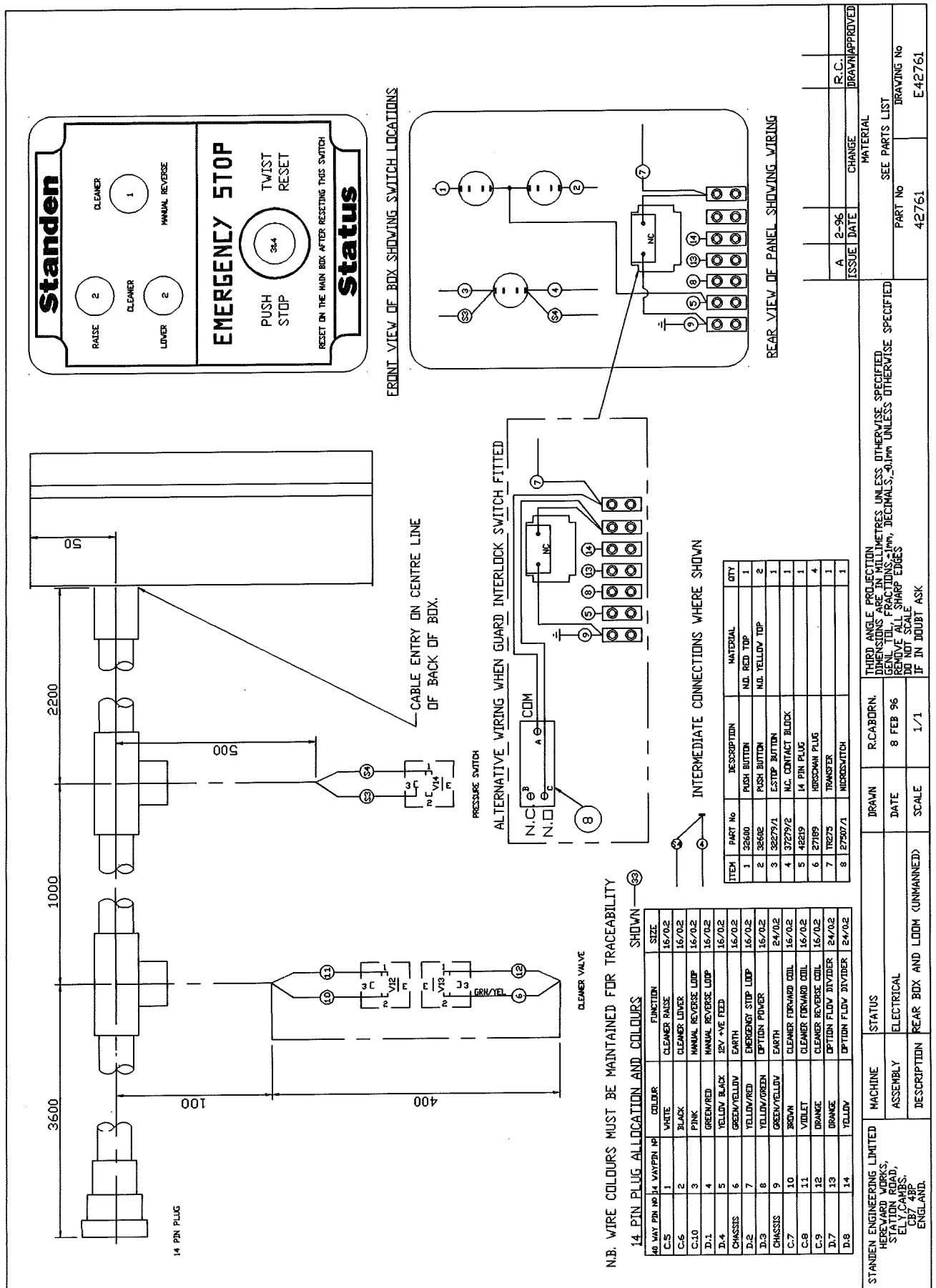
REAR VIEW OF PANEL SHOWING WIRING CONNECTIONS.
N.B. WIRE COLOURS MUST BE MAINTAINED FOR TRACEABILITY.

CHASSIS
12 VOLT -VE

FUSES 15A

ITEM	PART NO	DESCRIPTION	QTY	DETAIL	PART NO	DESCRIPTION	QTY	DETAIL	QTY
1	27467	ON / OFF SWITCH	1	18 42766	CONTROL BOX LID	1			1
2	42764	PUSH BUTTON	2	20 42180	CONTROL BOX HOSE	1			1
3	37073	SHAKE LIFT SWITCH	2	21 42181	CONTROL BOX HOSE	1			1
4	37189	FUSE HOLDER	2	22 42182	SOCKET CLIP	4			4
5	37190	L.E.D.	1	23		4			4
6	42807	AUTOMANUAL SWITCH	1	24 42863	TIMER RELAY	1			1
7	37278	CLID BREAKER SWITCH	1	25					

Unmanned Rear Control Box and Loom (machines from serial no. S-/060)



FRONT VIEW OF BOX SHOWING SWITCH LOCATIONS

REAR VIEW OF PANEL SHOWING WIRING

INTERMEDIATE CONNECTIONS WHERE SHOWN

ITEM	PART No	DESCRIPTION	MATERIAL	QTY
1	32640	PUSH BUTTON	NL RED TOP	1
2	32652	PUSH BUTTON	NL YELLOW TOP	2
3	32779/1	STOP BUTTON		1
4	37279/2	NC CONTACT BLOCK		1
5	42219	14 PIN PLUG		1
6	27089	HERSEMAN PLUG		4
7	TR286	TRANSFER		1
8	42208	SWITCH	DP, DT CENTRE BIAS DPT	1
9	37527	RUBBER COVER		1

14 PIN PLUG ALLOCATION AND COLOURS SHOWN

40 WAY PIN NO	14 WAY PIN NO	COLOR	FUNCTION	SIZE
C-5	1	WHITE	CLEANER RAISE	16/0.2
C-6	2	BLACK	CLEANER LOWER	16/0.2
C-10	3	PINK	MANUAL REVERSE LIMP	16/0.2
D-1	4	GREEN/RED	MANUAL REVERSE LIMP	16/0.2
D-4	5	YELLOW/BLACK	2V +VE FEED	16/0.2
C-6	6	GREEN/YELLOW	EARTH	16/0.2
D-2	7	YELLOW/RED	EMERGENCY STOP LIMP	16/0.2
D-3	8	YELLOW/GREEN	OPTION POWER	16/0.2
C-9	9	GREEN/YELLOW	EARTH	24/0.2
C-7	10	BROWN	CLEANER FORWARD COIL	16/0.2
C-8	11	VIOLET	CLEANER REVERSE COIL	16/0.2
C-9	12	ORANGE	CLEANER REVERSE COIL	16/0.2
D-7	13	DRAB	OPTION FLOW IN/VIDER	24/0.2
D-8	14	YELLOW	OPTION FLOW IN/VIDER	24/0.2

N.B. WIRE COLOURS MUST BE MAINTAINED FOR TRACEABILITY

THIRD ANGLE PROJECTION DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED GENERAL TOLERANCES: 1mm, DECIMALS: 0.1mm UNLESS OTHERWISE SPECIFIED

ITEM	PART No	DESCRIPTION	MATERIAL	QTY
1	32640	PUSH BUTTON	NL RED TOP	1
2	32652	PUSH BUTTON	NL YELLOW TOP	2
3	32779/1	STOP BUTTON		1
4	37279/2	NC CONTACT BLOCK		1
5	42219	14 PIN PLUG		1
6	27089	HERSEMAN PLUG		4
7	TR286	TRANSFER		1
8	42208	SWITCH	DP, DT CENTRE BIAS DPT	1
9	37527	RUBBER COVER		1

FRONT VIEW OF BOX SHOWING SWITCH LOCATIONS

REAR VIEW OF PANEL SHOWING WIRING

ITEM	PART No	DESCRIPTION	MATERIAL	QTY
1	32640	PUSH BUTTON	NL RED TOP	1
2	32652	PUSH BUTTON	NL YELLOW TOP	2
3	32779/1	STOP BUTTON		1
4	37279/2	NC CONTACT BLOCK		1
5	42219	14 PIN PLUG		1
6	27089	HERSEMAN PLUG		4
7	TR286	TRANSFER		1
8	42208	SWITCH	DP, DT CENTRE BIAS DPT	1
9	37527	RUBBER COVER		1

REAR VIEW OF PANEL SHOWING WIRING

THIRD ANGLE PROJECTION DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED GENERAL TOLERANCES: 1mm, DECIMALS: 0.1mm UNLESS OTHERWISE SPECIFIED

ITEM	PART No	DESCRIPTION	MATERIAL	QTY
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6	27089	HERSEMAN PLUG		4
7	TR286	TRANSFER		1
8	42208	SWITCH	DP, DT CENTRE BIAS DPT	1
9	37527	RUBBER COVER		1

FRONT VIEW OF BOX SHOWING SWITCH LOCATIONS

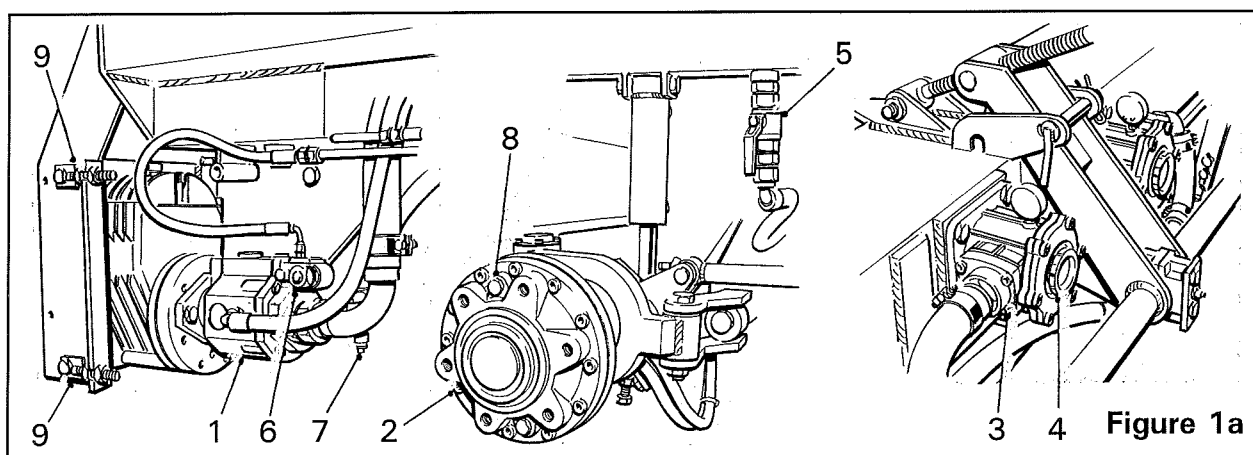
REAR VIEW OF PANEL SHOWING WIRING

ITEM	PART No	DESCRIPTION	MATERIAL	QTY
1	32640	PUSH BUTTON	NL RED TOP	1
2	32652	PUSH BUTTON	NL YELLOW TOP</	

A	2-96	CHANGE	R.C.
			DRAWN/PROVED
MATERIAL			
SEE PARTS LIST			
PART No		DRAWING No	
12762		E12762	

Status Powered Axle

The optional hydraulic powered axle is designed to provide additional traction during work. The powered axle is capable of transferring up to 36hp from the tractor PTO to hydraulically drive the harvester wheels giving a maximum speed of 5.5kmh (3.5mph). This is achieved by means of the load sensing, pressure compensated, variable displacement pump (item 1, figure 1a) which provides the hydraulic oil flow to drive the wheel motors (item 2, figure 1a). The harvester wheels can be set to forward, neutral or reverse by operating a switch on the in-cab control box. When forward or reverse is selected, the directional control valve mounted on the axle beam demands oil flow from the pump which then provides the necessary flow required to match the harvester wheel speed to the tractor speed. When the flow matches, the pressure compensator within the pump maintains a constant pressure in the hydraulic system.



The hydraulic oil is supplied from either the integral chassis tank which is increased, by use of a steel link pipe, to include the righthand chassis beam (1997 machines onwards), or from a separate side-mounted tank kit (1995/1996 machines). The side mounted tank requires approximately 91 litres (20 gallons) of oil. The integral chassis tank, which also supplies the cleaner unit, requires an additional 91 litres (20 gallons) of oil within the RH chassis beam.

Oil feed to the pump is through the suction filter (item 3, figure 1a) submerged into the tank.



Always ensure the suction filter knob (item 4, figure 1a) is wound fully in clockwise before operating the harvester.

The tank return is fitted with a shut-off valve (item 5, figure 1a).



Always ensure the tank return shut-off valve is in the open position (as shown) before operating the harvester.

The maximum pump output at 540rpm PTO speed is 76 litres/minute with the axle in drive. This can be checked by fitting a flow meter between the pump outlet and the pressure hose and then running the powered axle with both wheels clear of the ground.

The system pressure is controlled by the pump relief valve (*item 6, figure 1a*) which is preset at 200 bar. It may be necessary to adjust the system pressure if the harvester is trying to push the tractor. One turn anti-clockwise will reduce the relief valve pressure setting by approximately 25 bar. The pressure can be checked by fitting a pressure gauge to the gauge port (*item 7, figure 1a*) on the pump outlet and allowing the harvester to push against a braked tractor.



The pressure relief valve setting should never exceed 200 bar.

Bleeding/Filling Wheel Motors



Ensure the wheel motor casings are filled with hydraulic oil before starting. Failure to do so may cause premature failure of the motors.

Place the motor in a position in which one of the bleed screws (*item 8, figure 1a*) is topmost. Remove the bleed screw and pour in hydraulic oil until all trapped air has been eliminated. Refit the bleed screw and repeat for the second motor. Run the motors unloaded. Finally, operate the motors under load and check for leaks and extraneous noise.

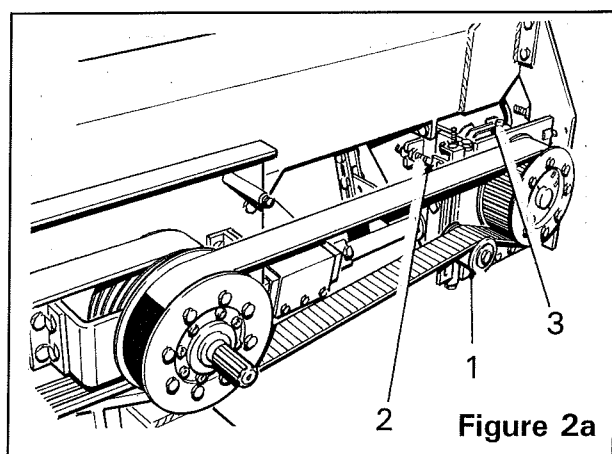


Figure 2a

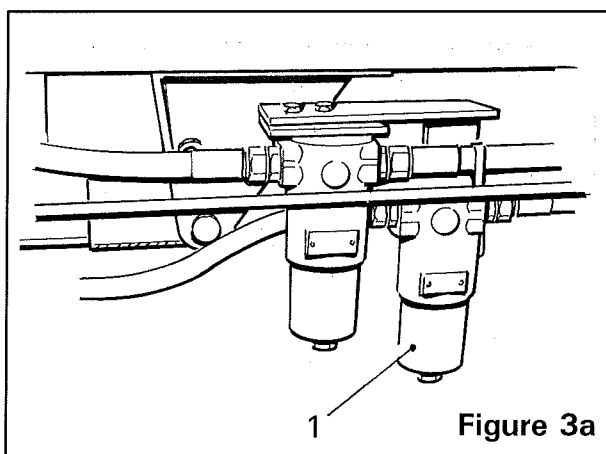


Figure 3a

Maintenance of the Mechanical Drives

The toothed belt drive from the main input pulley to the gearbox/pump pulley must be maintained at the correct tension and alignment. The belt is tensioned by the jockey roller adjuster (*item 1, figure 2a*). If necessary, the belt can be tracked using the two-way adjustment provided by the three adjusters (*item 9, figure 1a & item 2, figure 2a*) on the gearbox mounting.



Never attempt to adjust the belt drive while the pulleys are in motion. Always replace the guard after completing adjustments.

The gearbox (*item 3, figure 2a*) should be checked occasionally and topped up with EP 90 Gear Oil.

Maintenance of the Hydraulic System

The components utilised in the design of the hydraulic system have been chosen for their maintenance-free characteristics. Should it be necessary to remove any of the hydraulic components, cleanliness is of the utmost importance. Before breaking any connection in the system, ensure that the surrounding area is clean. Pressure wash the machine if possible. Prevent contamination entering the system by plugging any open pipe work and ports with plastic plugs or clean paper wipes. Do not use cloth or rags. Preventing contamination entering the system will prolong the life of the various hydraulic components and will help prevent component failure. To ease maintenance, both the suction and return lines are fitted with shut-off valves. Always bleed/fill the wheel motors before restarting.

To extend the life of the hydraulic system, the hydraulic oil should be carefully monitored. Ensure the harvester is horizontal when checking the oil level. The cold oil level should be kept slightly below the bottom of the LH and RH chassis mounted filler necks (1997 machines onwards) or within the level of the sight glass on the side-mounted tank (1995/1996 machines). Maintain the level by topping up or refilling with Esso Nuto 46 Hydraulic Oil.

If a high water content becomes apparent or a cloudiness in the oil, the hydraulic oil should be changed.

Regularly check all hoses for chafing or accidental damage and replace immediately.

The pressure filter element (*item 1, figure 3a*) should be replaced after the first 50 hours running time and then every 500 hours or annually thereafter.

To replace the pressure filter element:

1. Switch off the tractor engine and apply the hand brake.
2. Unscrew the bottom casing of the filter housing.
3. Remove the filter element and rinse out the casing.
4. Fit the new element and refit the casing ensuring that it is tight.
5. Run the system and check for leaks.

The suction filter element (*item 3, figure 1a*) should be replaced after the first 50 hours running time and then every 500 hours or annually thereafter. Subsequently the filter element should be cleaned or replaced if the indicator shows that the element is becoming blocked.

The suction filter element is serviced as follows:

1. Wind the suction filter knob (*item 4, figure 1a*) fully out anti-clockwise to close the cut off valve within the filter housing.
2. Release the screws holding the filter lid. A small amount of oil will be lost from the filter body.
3. Remove the top of the filter and withdraw the element.
4. Clean or replace the element and reassemble.

5. Wind the suction filter knob (*item 4, figure 1a*) fully in clockwise to open the cut off valve.
6. Run the system and check for leaks.

Star Cleaner Unit

The star cleaner unit is specifically designed to remove soil and clod on lighter land. The unit consists of a double haulm roller (*item 1&2, figure 1b*), seven full width sets of stars, a star/plain roller, a spreader roller, and two clod rollers (*item 3&4, figure 1b*). The cleaner unit is divided into two sections. The first section consists of the haulm roller and the first three sets of stars. The second section consists of the clod rollers and the remaining sets of stars. Overall speed control for the cleaner unit is provided electronically from the in-cab control box. The speed at which the stars and rollers in each section rotate can be varied by turning the control knob on the flow divider mounted on the LH side of the unit. Slowing down the first section will simultaneously speed up the second section and vice versa. The slower the speed, the more extraction will take place. Always ensure the speed is adequate to transfer the crop across the stars and into the cross elevator.

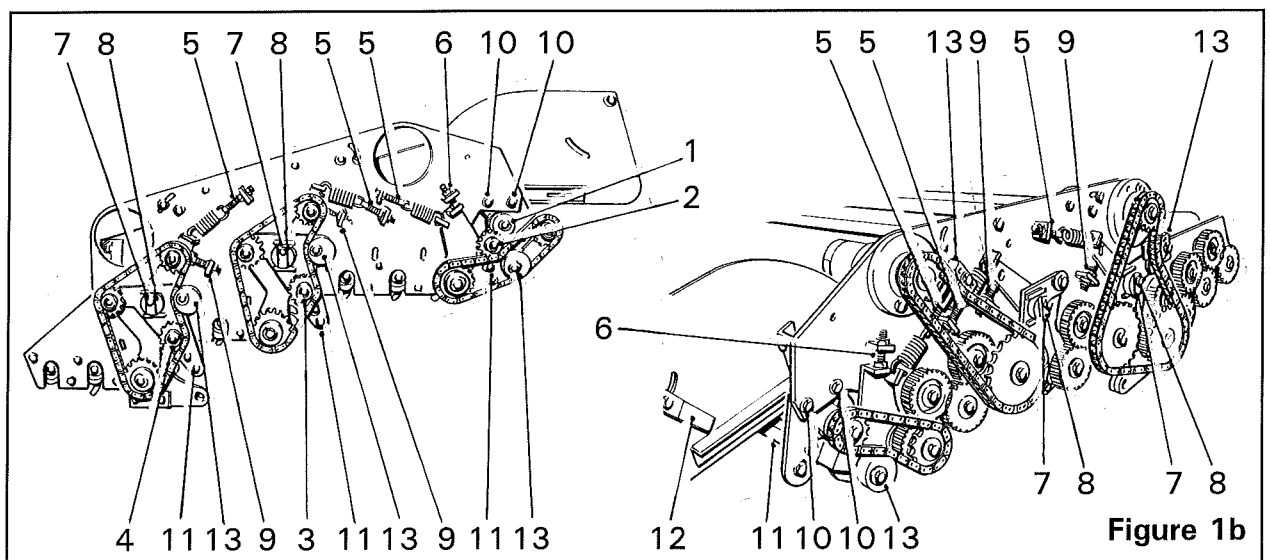


Figure 1b

Star Cleaner Unit Adjustment



All revolving drives; chains, gears, shafts etc. are potentially dangerous. Never attempt to make repairs or adjustments while the machine is running. Always switch off the tractor engine, apply the handbrake, remove the ignition key and disconnect the PTO shaft. Failure to observe these basic precautions is likely to result in serious personal injury.

The lower haulm roller (*item 2, figure 1b*) and the two clod rollers (*item 3&4, figure 1b*) are spring loaded enabling them to move allowing stones etc. out. To tension the rollers, slacken the locknuts and turn the spring adjusters (*item 5, figure 1b*).

The rollers have positional adjustment. To adjust the lower haulm roller (*item 2, figure 1b*), slacken the locknuts and turn the adjuster bolts (*item 6, figure 1b*). The two clod rollers (*item 3&4, figure 1b*) are adjustable for height and gap relative to the adjacent set of stars. To adjust the height, slacken the retaining bolt (*item 7, figure 1b*) and turn the eccentric boss (*item 8, figure 1b*). To adjust the gap, reposition the adjusters (*item 9, figure 1b*). To enhance their operation the clod rollers should be adjusted to just touch the stars. Ensure all adjustments are made evenly on both sides.

The gap between the haulm rollers (*item 1&2, figure 1b*) is also adjustable. To adjust, slacken the four retaining bolts (*item 10, figure 1b*) and move the upper roller to the required position.

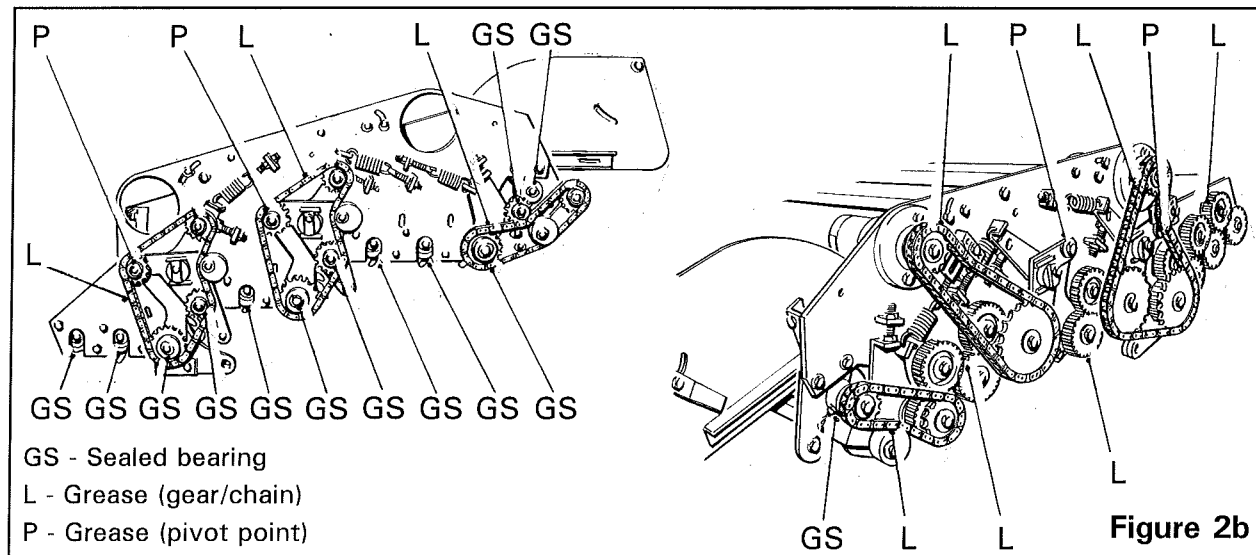
All haulm and clod rollers have scrapers (*item 11, figure 1b*) fitted to keep them clear of soil build-up. Set the scrapers as close as possible to the rollers without actually fouling them.

A set of haulm fingers are mounted at the top end of the star cleaner. The fingers are designed to catch the haulm as it leaves the second web and guide it into the haulm rollers. The height of the fingers can be adjusted by rotating the handle (*item 12, figure 1b*). Moving the fingers away from the second web will allow a clearer crop flow.

A set of brushes are suspended above each clod roller. The brushes are designed to restrict the crop flow momentarily to allow the roller to eject the clod etc. Moving the brushes away from the roller will allow a clearer crop flow.

Maintenance of the Mechanical Drives

To prolong the life of the drive components, the drive chains should be kept at the correct tension. Each drive chain is fitted with a tensioner block (*item 13, figure 1b*). Check the chain tension regularly and if necessary adjust the block to take up the slack.



Lubrication

Regular lubrication will ensure that the Standen Star Cleaner Unit provides a long and efficient service life. Depending on soil and weather conditions, the service schedule can vary. It is recommended that the unit is given a thorough inspection at least weekly during the working season.

Shafts and bearings fitted with grease nipples should be lubricated using a good quality general purpose grease. Bearings must not be allowed to run dry. When greasing it is better to give a little frequently than a lot a long intervals.

Note: With reference to the lubrication chart (*see figure 2b*), some of the bearings are sealed and pre-lubricated (*ref GS*). Care should be taken not to flood these bearings with grease or the seals may burst allowing grease to escape and dirt to get in. Should this happen, more frequent greasing will be required in order to keep the dirt at bay. When lubricating sealed bearings, only two strokes of the grease gun every twenty acres of work is necessary.

When checking the chain and gear drives (*ref L*), proprietary chain lubricant or a smear of grease should be applied to prolong their life.

Apply grease to all pivot points (*ref P*) and exposed threads to ensure they operate easily and remain free of corrosion.

