

VISION XS

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.

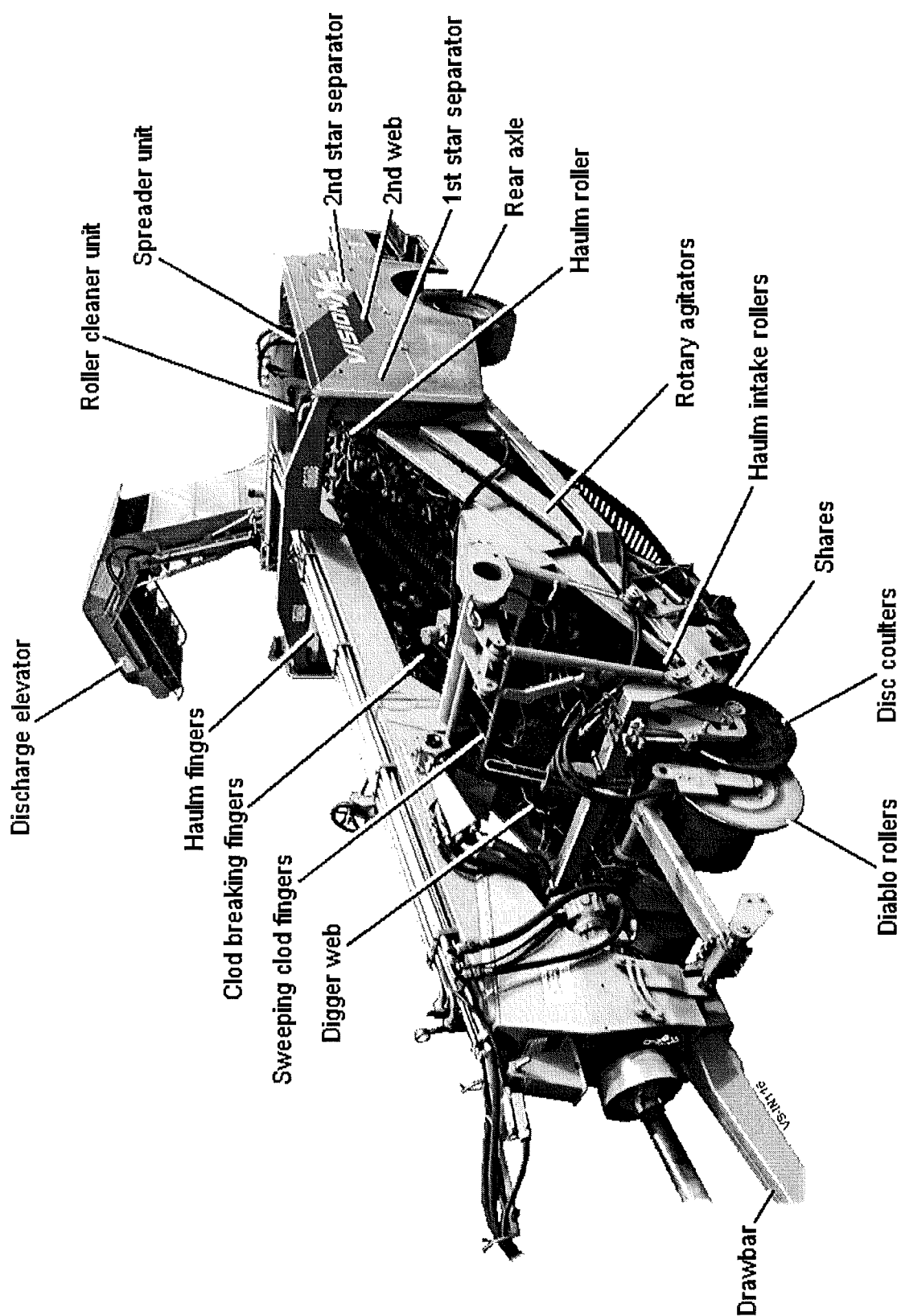
On delivery, check that the machine is as ordered and has not been damaged in transit. Please report any shortfall to your Standen dealer.

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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Introduction to the Handbook

This handbook provides the information for the operation, adjustment and maintenance of your Standen Vision XS. 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 driver's 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 3 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.

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

Safety

The Standen Vision XS has been designed to comply with current Safety Regulations. However, as with all machinery there will be inherent dangers whilst operating and carrying out maintenance on the machine. The following safety precautions should therefore be brought to the attention of all persons operating and working on the machine. The list is not exhaustive. All machinery is potentially dangerous and the operators must exercise great care 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.

Machine Noise Level

Average continuous sound level at the operator's ear with machine harvesting crop is 80.75dB (maximum peak level 85.6dB). It should be noted that this level could vary dependant upon tractor/machine combinations.

Operation



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



Never set machinery in motion before ensuring that everyone in the vicinity is aware of your intentions.



Never allow children or animals in the vicinity where machines are working and never allow anyone to ride on the machine.



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 machine is in the 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 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 operator's handbook and check the tightness of all nuts and bolts.



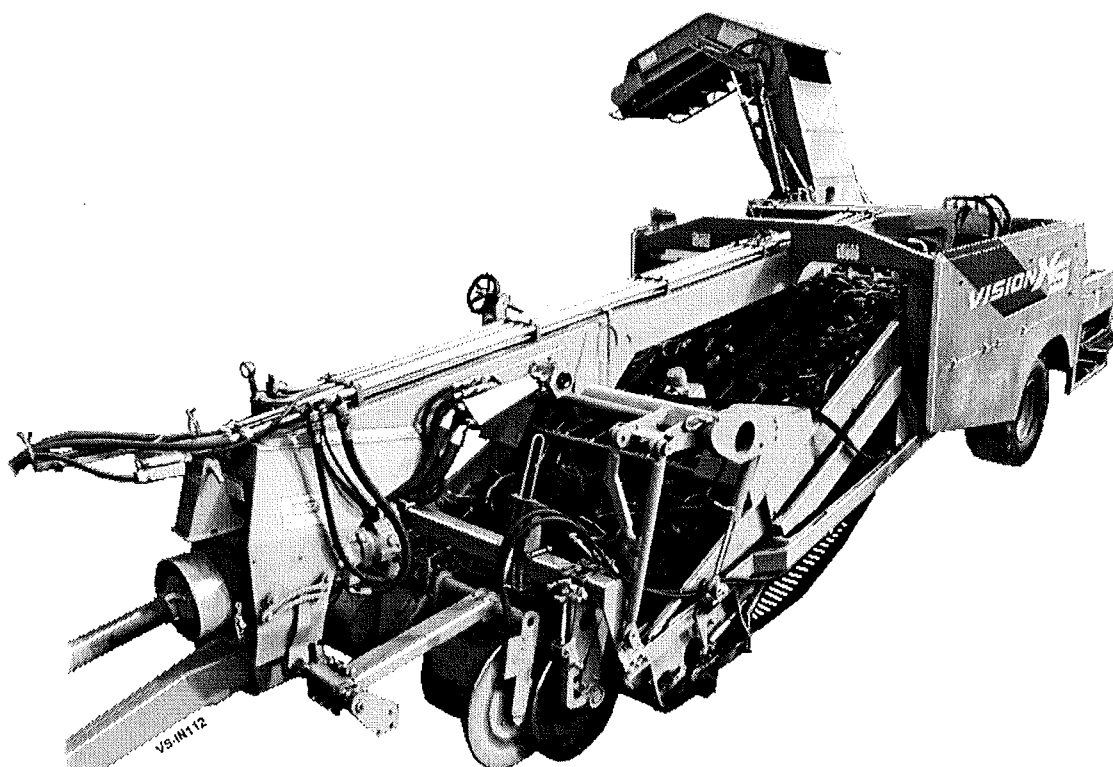
Always use mechanical or additional help when lifting heavy parts.



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

HSE information sheet**Safe use of potato harvesters**

Agriculture Sheet No 13

**Introduction**

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

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

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

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

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

Key dangers

Injuries are caused by:

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

Do's and Don'ts

Do:

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

Don't:

- reach into the potato harvester unless all drives are stopped;
- climb over harvesters;
- jump on or off the harvester when it is moving;

- leave the driving position of a moving or running tractor;
- work under box handling attachments without using the supports provided;
- carry out maintenance with the tractor engine running;
- park or carry out maintenance when under or near overhead power lines;
- run the harvester with the guards raised or removed;
- allow children on or near the harvester.

General guidance

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

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

Further information

HSE priced and free publications are available by mail order from:

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

HSE priced publications are also available from good booksellers.

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

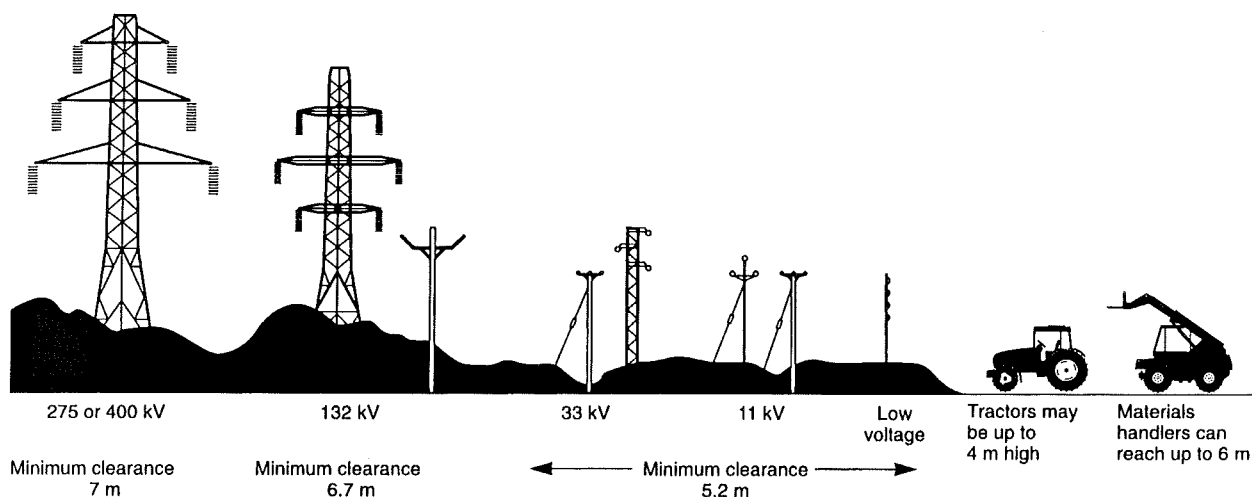
This leaflet contains notes on good practice which are not compulsory but which you may find helpful in considering what you need to do.

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HSE information sheet

Working safely near overhead power lines

Agriculture Information Sheet No 8 (rev)

**Be aware of line heights****Introduction**

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

Most incidents involve high-voltage lines supported on wooden poles, but the dangers of other power lines cannot be ignored.

This information sheet outlines the steps you can take to reduce the risks when working near overhead power lines. Remember the Electricity at Work Regulations 1989 apply to work activities carried out near power lines.

Planning precautions

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

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

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

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

The farm map can be used as a reference when planning cropping or other work, instructing machine operators and contractors, or buying new equipment.

In cases where there is a significant risk area, it is sensible to discuss the following measures with the electricity company:

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

Working safely

Key elements of safe systems of work are:

Training

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

Visitors

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

Use of machinery

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

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

Risks can be reduced by:

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

EMERGENCY ACTION IN THE EVENT OF AN ACCIDENT

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

Further advice

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

Further reading

Avoidance of danger from overhead electrical lines
GS 6 (rev) HSE Books 1991 ISBN 0 11 885668 5

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

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

Management of health and safety at work. Management of Health and Safety at Work Regulations 1992. Approved Code of Practice HSE Books 1992 ISBN 0 7176 0412 8

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

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

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Vision XS

The Vision XS by Standen 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, 1700 mm and 1500 mm 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 that 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 Vision XS is a four-wheel drive with 100 hp for the basic unmanned machine and 120 hp for the manned machine. These powers may need to be varied to achieve optimum output under different crop conditions, and depending on the specification of the harvester.

The harvester requires a constant hydraulic oil supply from the tractor of a minimum 50 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 30 amps 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 Vision XS 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 basic unmanned model and approximately 1.1 tonnes with the manned model.

Should the Vision XS be towed from the tractor clevis hitch then the optional ring hitch spacer must be used to eliminate chop on the clevis pin.

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



The operator should have read and understood the tractor operator's manual prior to attaching the machine and putting it to 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 (see Fig 1). Raise the harvester on the pick-up hitch. The harvester chassis should be nominally level. If the chassis is in a nose up attitude or extremely nose down, the drawbar eye should be adjusted accordingly to compensate.

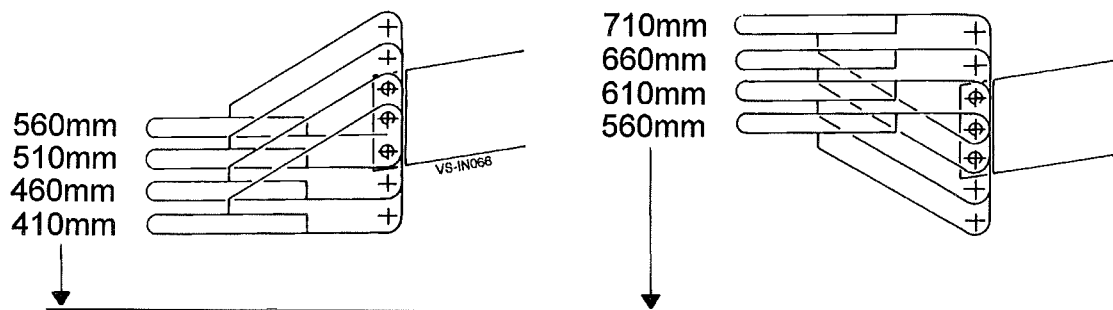


Fig 1

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, fig 2) to the tractor manufacturer's recommended low back-pressure return coupling.
2. Connect the pressure hose marked red (item 2, fig 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 50 litres/minute. The harvester hydraulics will accept up to 80 litres/minute maximum.

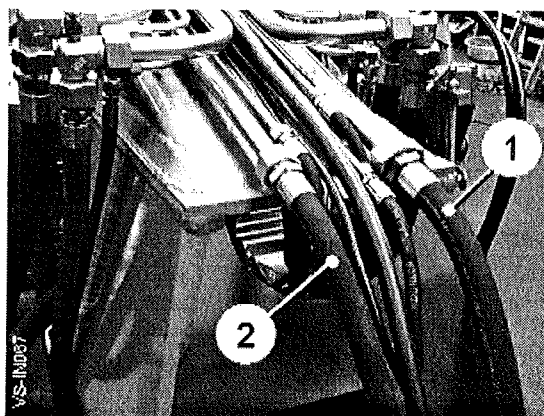


Fig 2

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 harness ensuring that the harness is safely routed into the cab. Connect the lighting plug to the tractor lighting socket.
5. Connect the control box power supply cable or directly to the tractor battery to the tractors highest rated electrical plug if fitted, the blue lead to negative (-) and the brown lead to positive (+).

PTO Shaft



It is essential that the PTO shaft be matched to the tractor to give the correct drive-line and to ensure that it is safe in work. An incorrectly fitted or badly guarded PTO shaft can be lethal. Do not take chances.

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.

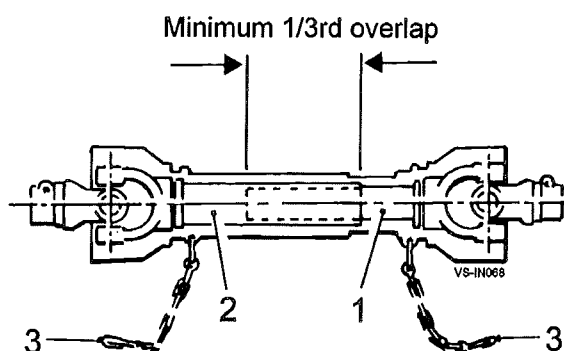


Fig 3

1. Separate the male shaft (item 1, fig 3) and female shaft (item 2, fig 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 1/3rd 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, fig 3) to secure anchoring points on the tractor and machine ensuring that the chains will not over-tighten when the machine is turning.

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

Digger Assembly

The digger assembly, which includes the diablo rollers, disc coulters, shares and digger web, is retained in the raised position by the transport lock cables (item 1, fig 4) fitted on both sides of the machine. Before attempting to operate the digger assembly, the transport lock cables will need to be released by removing the retaining clips and washers (item 2, fig 4).

The digger assembly is controlled electronically from the in-cab control box. The 'Digger Share' switch manually raises and lowers the digger web. When set to ▼ the digger is in the float position and will continue to lower until the diablo rollers or shares rest on the ridge. Returning the switch to the neutral position will hold the digger at its present setting. In operation the digging depth is set using the 'Auto Depth' control knob. The set depth can be displayed on the service terminal allowing the operator to adjust the working depth through the field.

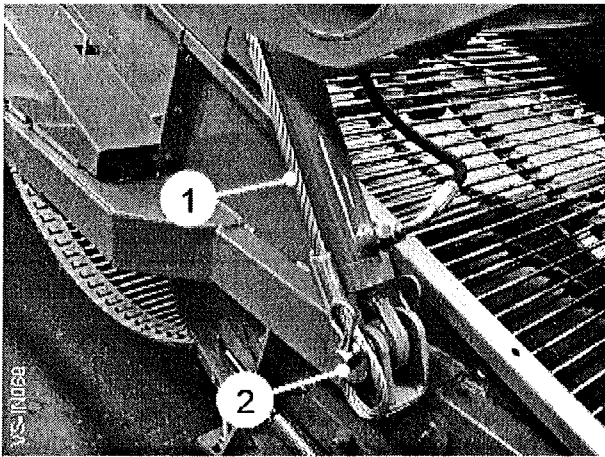


Fig 4

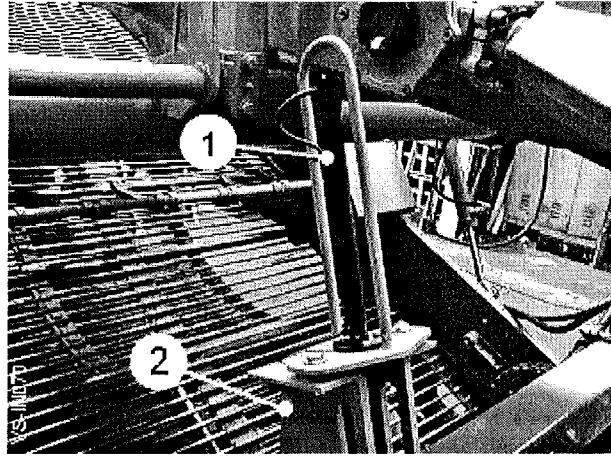



Fig 5

Automatic Depth Control

Pressing the button  brings the automatic depth control into circuit. The 'Digger Share' switch operates the system. Selecting ▲ will manually raise the digger, while selecting ▼ turns on the automatic depth control and the diablo rollers control the depth setting of each digger ram independently. The 'Auto Depth' indicator lights 'L' (left) and 'R' (right) show when the depth control sensors are operating. Time delay for each side of the digger can be set by adjusting the left and right delay parameters via the service terminal. Maximum and minimum dead band limits can also be set. When the 'Auto Depth' button is on and the terminal displays the function 'Digger Lift', a numerical figure representing the set depth is also displayed. In work the digging depth can be varied using the 'Auto Depth' potentiometer on the control box.

A depth control unit (item 1, fig 5) is fitted to each diablo roller. 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 sensor detects the position of the top link of the depth turnbuckle. Initial digging depth should be set with the harvester standing on a firm level surface. Place a 250mm block under each diablo roller and lower the digger shares to the ground. Then set the turnbuckles so that the top pins are 30mm from the top of the slots in the reaction brackets (item 2, fig 5).

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, fig 6) and reaction bracket bolts (item 2, fig 6).
2. Slide the roller frame (item 3, fig 6) and reaction bracket (item 4, fig 6) to the required setting and re-tighten.
3. Repeat for the other diablo roller ensuring they are set symmetrically about the centre line of the machine.

The turnbuckle (item 5, fig 6) 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.

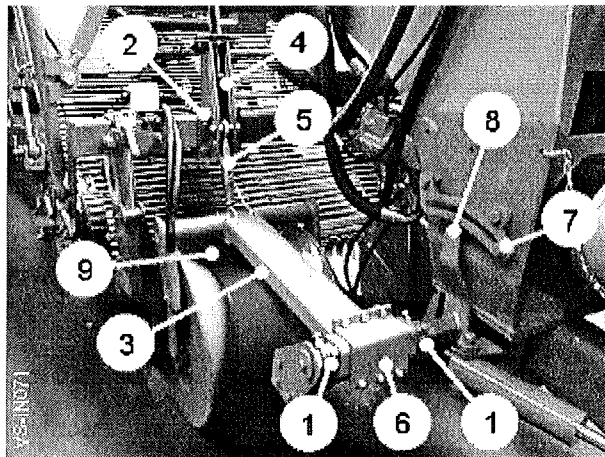


Fig 6


The diablo rollers are mounted on rubber torsion springs (item 6, fig 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 positioning the stop (item 7, fig 6) behind the arm (item 8, fig 6) in the pressure-setting quadrant, weight is removed from the diablo roller. Positioning the stop in front of the arm 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 9, fig 6). The scrapers should be set as close to the rollers as possible without fouling them.

Hydraulically Powered Diablo Rollers

Optional hydraulically powered diablo rollers are available for use in soil conditions where poor ridge flow over the shares onto the digger web is regularly experienced.

The button  starts/stops the diablo roller drive and speed can be varied by turning the control knob clockwise to increase or anticlockwise to decrease speed. Setting the speed of the diablo rollers to run slightly faster than ground speed will induce a positive flow of the ridge onto the shares. Care must be taken not to run the diablo rollers excessively fast as this can cause scuffing to potatoes that are near the top of the ridge.

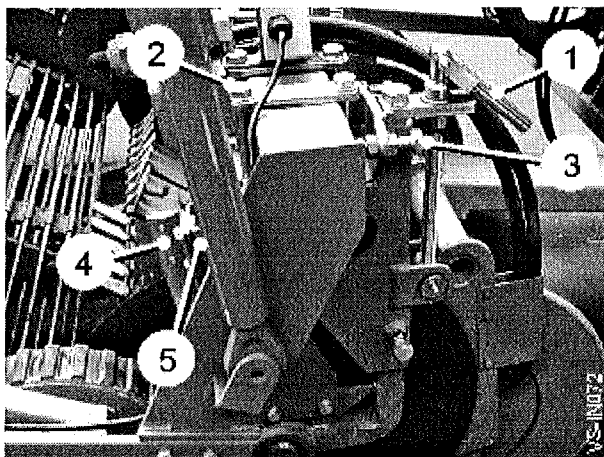


Fig 7

Disc Coulters

For two row work the harvester is fitted with four 64 cm diameter disc coulters, and for full width bed work, with two. The disc coulters 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, fig 7) until the required depth is reached.

To set the disc coulters row width/cutting width:

1. Release the clamp bolts (item 2, fig 7) and locking bolts (item 3, fig 7) and slide the disc assembly along the bridge beam to the required position.
2. Re-tighten the clamp bolts (item 2, fig 7) and then re-tighten the locking bolts (item, 3, fig 7).
3. Repeat for the other discs ensuring they are set symmetrically about the centre line of the machine.

The disc coulters are each fitted with two scrapers (item 4 & 5, fig 7), these should be set as close to the disc as possible without fouling it.

Hydraulically Powered Disc Coulters

For very light soil conditions hydraulically powered disc coulters are available to help keep the discs turning. Hydraulic power is derived for the same source as for the powered diablo rollers. Total combinations of hydraulic options need to be discussed with Standen Engineering Limited. Spring loading is also part of the powered disc specification and can be supplied as a separate option.

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 1, fig 8) are mounted on the cross shaft (item 2, fig 8) which is linked to each side of the digger assembly. The holes (item A, fig 8) 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 hand wheel (item 3, fig 8) 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.

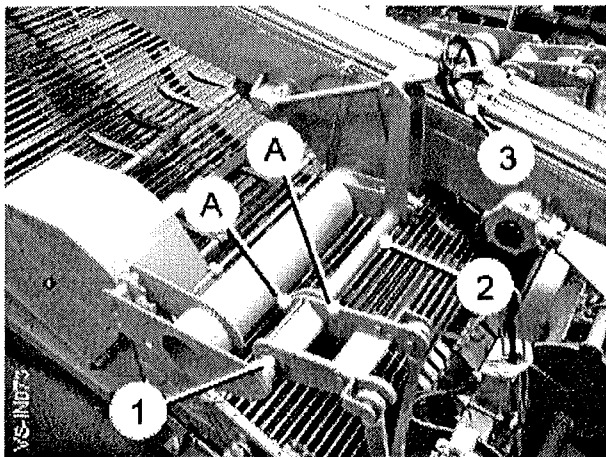


Fig 8

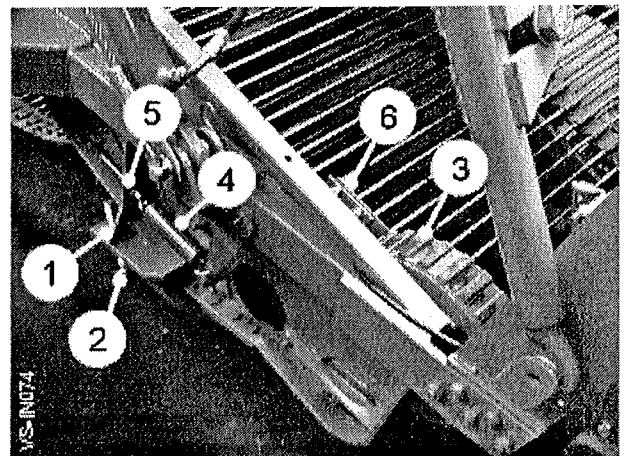


Fig 9

Shares

To adjust the angle of the shares loosen the adjuster locknuts (item 1, fig 9) on both sides of the machine, and re-position adjustment (item 2, fig 9). Ensure both sides are adjusted evenly by measuring from the tip of the outer shares to the disc support bridge.



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


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. 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.

Changing webs is a simple operation of removing the web 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.

Hydraulic Digger Web Drive

The digger web drive is taken from the RH front load sensing hydraulic pump. The pump supplies oil through the control valve to the motor mounted on the right hand side of the machine driving onto the assister shaft gear. This ensures that the web drive stays exactly in phase eliminating any hunting in the web.

The digger web is controlled electronically from the in-cab control box. The  button starts/stops the digger web and speed can be varied by turning the speed control knob clockwise to increase or anticlockwise to decrease speed.

Haulm Intake Rollers

The haulm intake rollers are fitted 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 3, fig 9) are spring loaded onto the digger web bars. The outer rollers are fitted with tension springs (item 4, fig 9) which are mounted to the web sides by the threaded adjusters (item 5, fig 9) which allow the required amount of tension to be applied. The centre rollers (if fitted) are mounted on a spring-loaded arm and are tensioned with a coil spring and threaded adjuster. The scrapers (item 6, fig 9) fitted to each roller should be set as near to the roller as possible without fouling it.

Depending on the width of the digger web and the row width configuration to be lifted, the haulm roller build will vary.

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 the soil is solid and start to separate the potatoes from the soil, and thirdly to rub the soil through the web before reaching the agitators.

Hydraulic drive for the sweeping clod fingers is controlled from the in-cab control box.

The button  starts/stops the clod fingers and speed can be varied by accessing the flow parameter on the service terminal.

To set the height of the fingers (item 1, fig 10) above the web, loosen the clamp nuts (item 2, fig 10) and rotate the mounting bar (item 3, fig 10) until the fingers are at the required height. 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. 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.

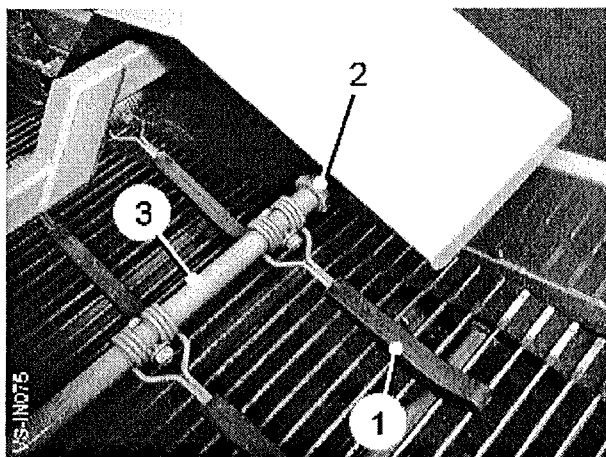


Fig 10

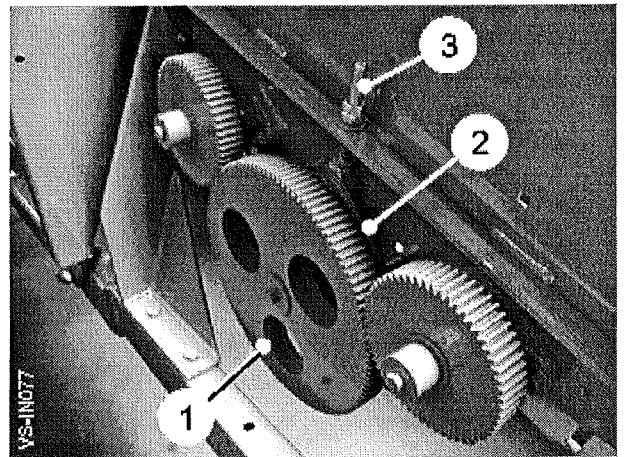




Fig 11

Rotary Agitators

2 sets of rotary agitators are fitted with independent controls. These are designed to separate the soil from the crop as it is elevated up the digger web. Hydraulic drive for the agitators, powered from the same pump as the discharge web, is controlled from the in-cab control box.

The buttons  and  start/stop the front and rear digger web agitators respectively and frequency of agitation can be varied by turning the control knobs clockwise to increase or anticlockwise to decrease the agitator speed. The faster the speed the more separation takes place, but also more bruising damage may occur. The amount of agitation necessary will depend on the crop and soil conditions encountered. On light soils care should be taken not to remove too much soil too early as this can lead to crop damage if the entire soil cushion has been removed before reaching the haulm roller.

The meshing of the agitator motor drive gear (item 1, fig 11) can be set by loosening the motor plate (item 2, fig 11) and using the adjuster (item 3, fig 11). To raise or lower the motor plate a small amount of backlash should be allowed between the gears.

Clod Breaking Fingers

The clod breaking fingers (if fitted) consist of one or two rows of trailing rubber blocks (item 1, fig 12). These operate by rolling the clods and potatoes which, in some soil conditions, has the effect of splitting the clods and allowing the smaller pieces to fall through the web.

To vary their effectiveness the clod fingers can be raised above or lowered down onto the web by adjusting the turnbuckle (item 2, fig 12). Care should be taken not to set the fingers to operate too rigidly onto the web or bruising and skin scuffing may occur.



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

The turnbuckle (item 2, fig 12) can be replaced with an electric actuator for in-cab adjustment (dependent upon machine specification).

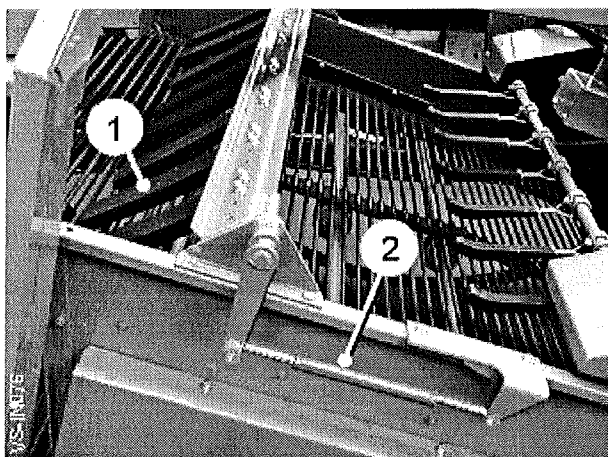


Fig 12

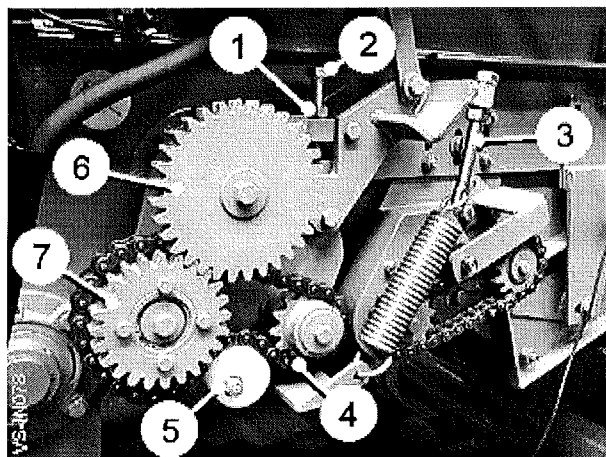


Fig 13

Haulm Roller



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

The haulm roller is designed to pinch the haulm and trash and drop it back onto the ground under the machine. Adjustments for the haulm roller are as follows:

To increase/decrease the gap between the haulm roller and digger web, release the locknut (item 1, fig 13) and turn the setscrew (item 2, fig 13). Care must be taken to set the gap equally on both sides.



Do not attempt to close the haulm roller gap too much or the web joiner may foul the haulm roller causing damage to both.

To increase/decrease the haulm roller spring tension, adjust the setting of the spring tensioner (item 3, fig 13). 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 adjusted by turning the hand wheel mounted on the LH side of the machine above the haulm roller unit. 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 2nd 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 raising it up. For effective harvesting this is one of the most critical adjustments, hence the simplicity with which it can be varied on the Vision XS.

The haulm roller is fitted with a scraper. Set the scraper as close to the roller as possible without actually fouling it. The haulm roller drive chain (item 4, fig 13) is tensioned by rotating the tension block (item 5, fig 13).

Haulm Roller Reversing Kit

The optional haulm roller reversing kit consists of a chain and sprocket which are fitted in place of the reversing gears (item 6 & 7, fig 13). The reversing kit is used when the pinching action of the haulm roller is not required on crops such as onions etc.

Haulm Fingers

The function of the haulm fingers (item 1, fig 14) 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.

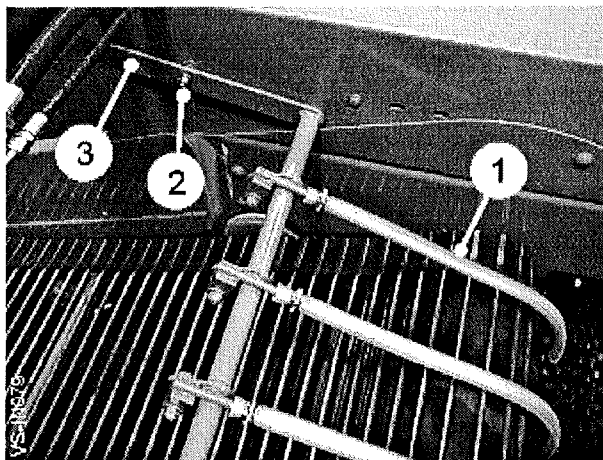


Fig 14

By releasing the clamp bolt (item 2, fig 14) and raising/lowering the handle (item 3, fig 14) the fingers can be moved. Each half is adjusted separately. A plastic sleeve is fitted to each finger. The sleeves prevent bruising of the potatoes and should be replaced when they wear through or are lost.

1st Star Separator

The 1st star separator is positioned between the haulm roller and 2nd web. The unit consists of two rows of twelve fingered rubber stars and a transfer roller which are designed to give a degree of soil and clod separation depending on the crop and soil conditions.

The relative height of the stars behind the haulm roller can be set by the mounting bolts (item 1, fig 15) on either side of the chassis. Ensure the unit is level by checking the height of the top of the stars below the top of the chassis web sides. Drive input to the star separator is from the right hand end of the digger web drive shaft. Two chain tensioners (item 2, fig 15 and item 1, fig 16) are fitted to maintain the correct drive tension, and to prevent jerking in the star drive.

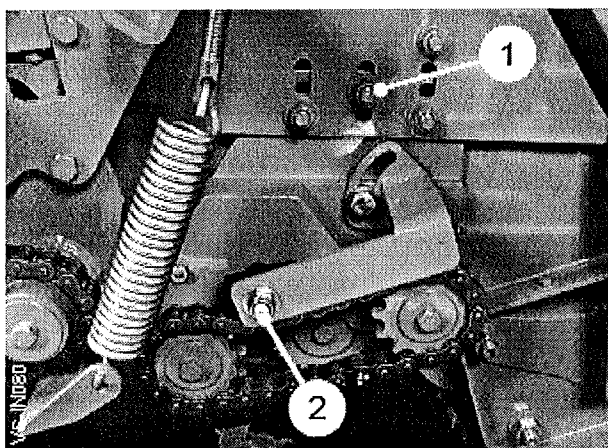


Fig 15

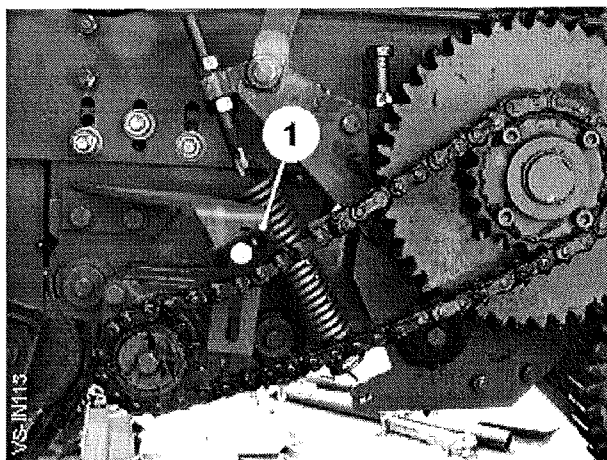



Fig 16

2nd Web

The standard 35mm pitch 2nd web is 1720mm wide regardless of the digger web width. Rubber covers are fitted to the web bars to minimise crop damage and drop-away links release any material trapped inside the web. Alternative web options are available.

The button  starts/stops the 2nd web and pre-set speed is adjustable via the service terminal. The web module is mounted on adjusters (item 1 & 2, fig 17) to allow optimum setting of crop transfer on and off the web.

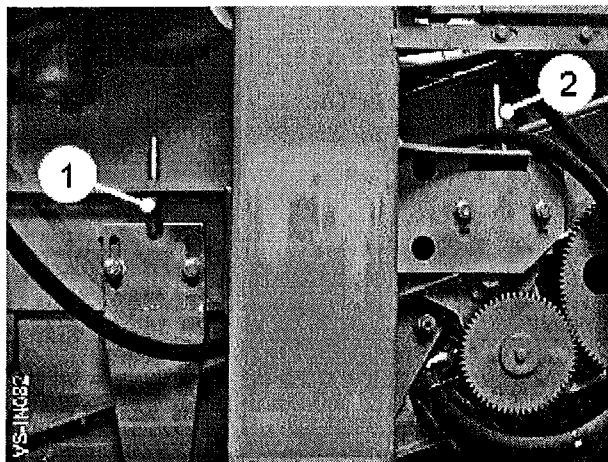



Fig 17



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

2nd Star Separator

The 2nd star separator is fitted with 2 rows of stars (item 1, fig 18), and a rubberised roller (item 2, fig 18), with 2 stainless steel rollers (item 3, fig 18) between them, feeding onto the roller cleaner unit over a pair of stainless steel rollers (item 4, fig 18).

The button  starts/stops the unit and preset speed can be adjusted via the service terminal using the flow parameter. The star separator angle is hydraulically adjustable, and lifts and lowers the unit while at the same time maintaining the discharge height onto the roller cleaner.

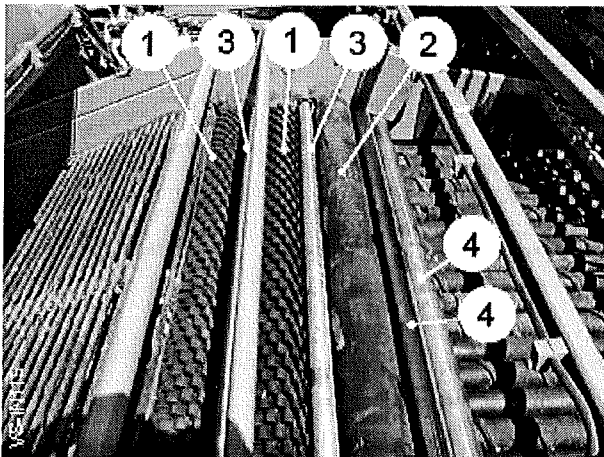


Fig 18

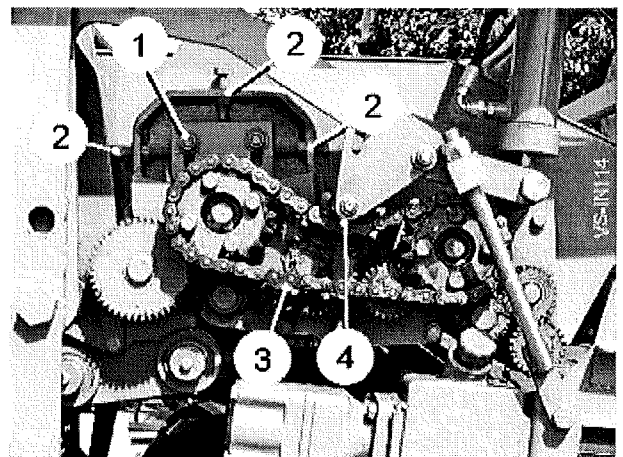


Fig 19





The stainless rollers (item 3, fig 18) between the stars are available in 2 sizes to allow for differing crop conditions. Fitting a smaller roller creates a larger separation gap.

The gap between the roller and the stars is adjustable by lifting the roller carrier, and also by moving it fore and aft relative to the stars. This is achieved by releasing the clamp bolts (item 1, fig 19) and then adjusting the positioning bolts (item 2, fig 19).

The rollers (item 3, fig 18) are driven in the direction of crop flow by the drive chain (item 3, fig 19). The chain is tensioned by adjusting the tensioner (item 4, fig 19).

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. Control for the roller cleaner unit is supplied electronically from the in-cab control box.

The controls consist of: 'Cleaner' angle increase , decrease , start/stop , manual 'Reverse' , and speed control. The 'Reverse' button starts the roller reverse sequence allowing stones and trash seen by the operator to be ejected before a blockage occurs.




All guards must be in place when the cleaner unit is in operation. Never 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.



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 (1-1.5 cm) at the end of the roller shafts. For seal/bearing adjustment procedures, see the maintenance section of this handbook.

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°. An optional auto angle unit can be fitted to maintain a pre-set angle on the cleaner when working on undulating ground. The auto angle unit is activated by pressing the control box button .

Roller Speed

By increasing the roller speed, 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 Sizes

Various sizes of plain rubber rollers are available, Ø82.5mm, Ø74.5mm and Ø60mm. These are used in conjunction with Ø82mm and Ø75mm inner diameter GSR or low profile spiral scrolled rollers. The large diameter plain rollers in conjunction with small diameter spiral rollers will normally be used where tuber size is small and in dry soil conditions. The small diameter plain rollers in conjunction with large diameter spiral 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. Intermediate gaps can be obtained by selecting alternative combinations of 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, bulbs, onions and parsnips, but can also be successfully used on some varieties of potato.

Changing Rollers

The rollers are retained on the cleaner unit shafts by a single bolt and washer (item 1, fig 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 off 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.

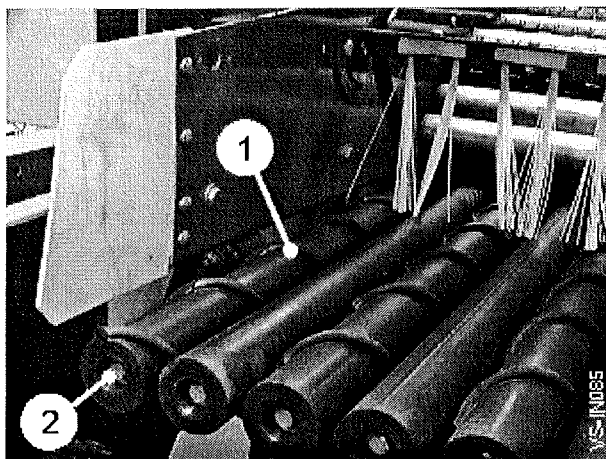


Fig 20

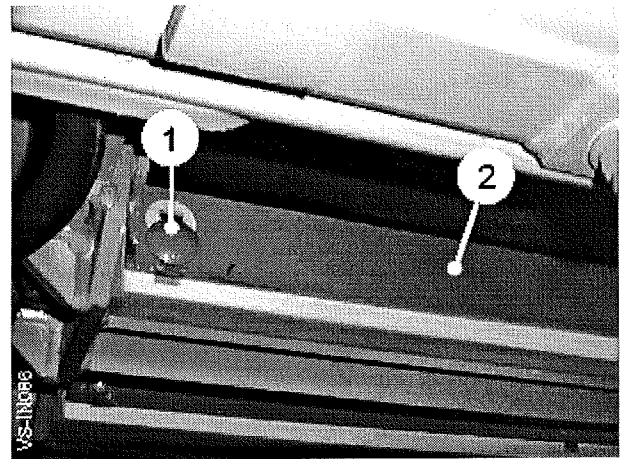


Fig 21

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, fig 21) and slide the scraper blade (item 2, fig 21) up until it is 2-3mm clear of the roller. Re-tighten the mounting bolts and check that the rollers do not foul on the scraper blades when running.

Cleaner Replacement 3rd Web

For conditions and crops where the roller cleaner unit is not required, a replacement 3rd web can be fitted. The 3rd web is hydraulically driven from the cleaner circuit. A manual flow divider is used to pre-set the web speed. Once the pre-set web flow requirement is reached, the 3rd web rotary agitator can be turned on and off and speed varied using the cleaner speed control

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 a pressure transducer (item 1, fig 22) that senses the operating pressure, and is monitored by the Can-Bus processor.

The reverse pressure is set on the control box display screen. Increase/decrease the reverse pressure in small steps until the required operation is achieved. The operating pressure can be checked in work via the service terminal diagnostic programme.

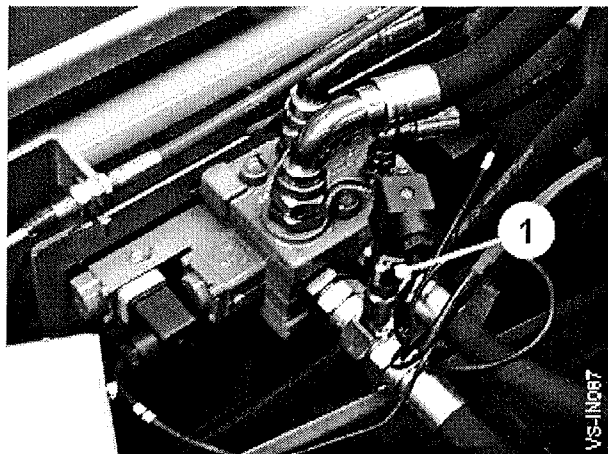







Fig 22

Spreader Unit

In a direct loading machine, as the crop passes off the roller cleaner unit onto the elevator web it first passes over the spreader unit. The spreader is designed to distribute the crop evenly over the full width of the elevator.



The button marked 'Spreader/Table'  will start/stop the spreader independently of the elevator web.


Discharge Elevator

The hydraulically driven discharge elevator is designed to fold within the width of the machine for transport and open out of work when loading potatoes into a trailer running alongside. Folding and unfolding is controlled by the control box joystick. Fold in  and fold out , operates the bottom section which is primarily used to set the working height and reach. Raise  and lower , operates the top section which adjusts the discharge height of the crop into the trailer and allows for even loading. The optional auto height sensor (if fitted) is activated by pressing the button 'Auto Height' .

Note: The auto height sensor is turned off automatically if any of the elevator fold functions are operated.

The speed of the discharge web is controlled electronically by the speed control knob.

The button 'Discharge'  starts/stops all the elements of the rear section of the harvester. With the 'Spreader/Table' button on, the button 'Elevator'  starts/stops the elevator web only.

On machines fitted with a picking table, the button 'Spreader/Table'  starts/ stops the manned elements of the machine.

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.

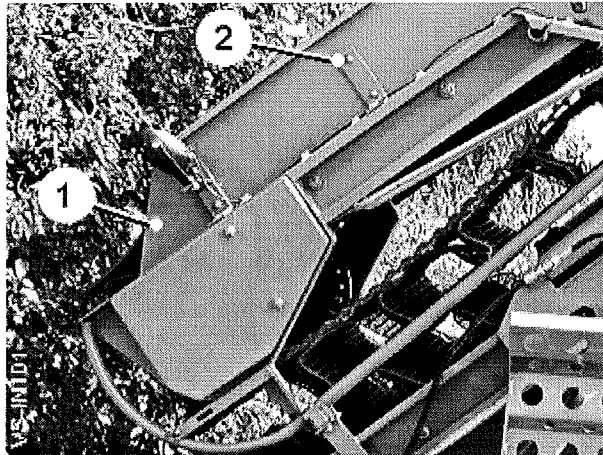


Fig 23

To ensure the web panels (item 1, fig 23) do not foul the elevator web, they are mounted on slotted brackets (item 2, fig 23) that 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 the web bars, as this will cause rapid wear and damage to both the web and panels.


Windrow Attachment

An optional windrow attachment can be fitted to the harvester that allows the crop to be discharged between the two unlifted rows on the left hand side of the machine. An adjustable rubber chute is hooked onto the left hand end of the elevator web. This is easily removed to reduce transport width.

The button 'Windrow'  reverses the elevator drive to discharge the crop on the left hand side of the machine.

Picking Table

The optional low-level picking table allows up to four pickers to work in comfort, two on either side of the picking belt. The picking off surface is a wide rubber belt with a divider in the middle. Reject material is placed within the divider and carried to the rear of the harvester.

The control box button 'Spreader/Table'  starts/stops the manned elements of the machine. The speed of the picking belt can be varied to suit crop conditions by adjusting the flow control knob mounted at the rear of the RH platform.





Care must be taken at all times when working on moving machinery. Never wear loose clothing and always tie back long hair. People working on the harvester must be made aware of the tractor driver's intentions.



The emergency stop buttons positioned above the picking belt, when activated, shut down all hydraulic drives and electrical controls.

The picking table feed web can be moved rearwards hydraulically. This allows easy changing of cleaner unit rollers or, with the addition of the spreader unit, allows the crop to fall directly into the discharge elevator bypassing the picking table altogether.

The position and angle of the feed web is adjustable to set the drop height from the roller cleaner unit onto the feed web, and the discharge height from the feed web onto the picking belt. Web speed is also adjustable by using the flow divider on the RH side of the picking table platform.

The control box buttons 'Option' raise  and lower  operate the feed web hydraulic rams.




Ensure the front of the canopy is released from the top of the feed web before raising.

On machines with additional options such as onion gate or sweeping clod fingers etc., the ram circuit is shared and the feed ram circuit will need to be selected by operating the manual diverter valve mounted behind the RH centre guard door.


Rear Axle

The rear axle is fitted with steerable wheels and is linked to the chassis by a pivot and hydraulic ram allowing the harvester to be levelled relative to the ground. Control of the steering and levelling is from the in-cab control box.

The buttons 'Axle Level' raise  and lower  operate the levelling ram between the chassis and axle.

Optional automatic levelling can be fitted to maintain side-to-side 'horizon' level when operating on undulating ground. The automatic levelling is activated by the button 'Axle Level' .

The buttons 'Axle Steer' right  and left  steer the rear of the machine in the indicated direction.

The auto centre button  when pressed operates the self-centring circuit to automatically set the wheels to the straight-ahead position.

Different sized wheels are fitted to the harvester. The fixed LH wheel is tracked to match a position suitable for all row widths. The larger, adjustable RH wheel, with its greater rolling radius, gives better performance on soft soil. The wheel can be adjusted for 30-36" row widths. By reversing the wheel rim the range can be extended further. Consult Standen Engineering for information on row widths and wheel rims.

To operate the harvester on 28" rows, the harvester needs to be fitted with a narrow axle and different RH wheel.

Rear Axle Wheel Setting

The RH wheel setting 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.

1. Switch off the tractor engine, apply the hand brake and jack up the machine.
2. Slacken the two clamp bolts (item 1, fig 24), the locking bolt (item 2, fig 24) and release the clamp (item 3, fig 24).
3. Remove the drag link bolts (item 4, fig 24).
4. To set the track, pivot the wheel by hand to lengthen or shorten the drag link (item 5, fig 24) and replace the drag link bolts loosely.

5. Slide the axle beam (item 6, fig 24) out to the required position by pulling on the wheel opposite the drag link.
6. Relocate the locking bolt (item 2, fig 24) into the appropriate dimple (A, B, C, D, E, and F, fig 25) under the axle beam and re-tighten all bolts.
7. Check the tracking is correct and the wheels are parallel.

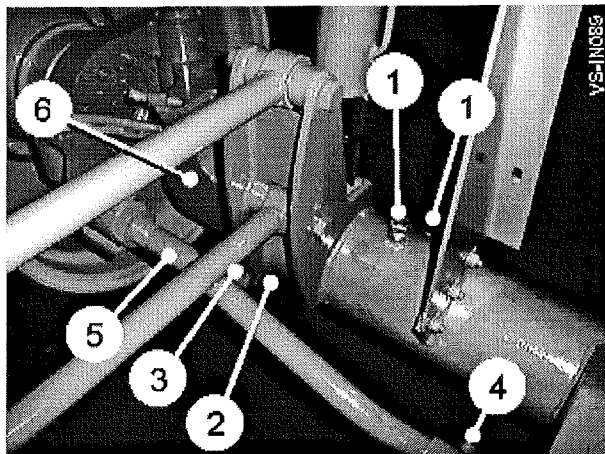
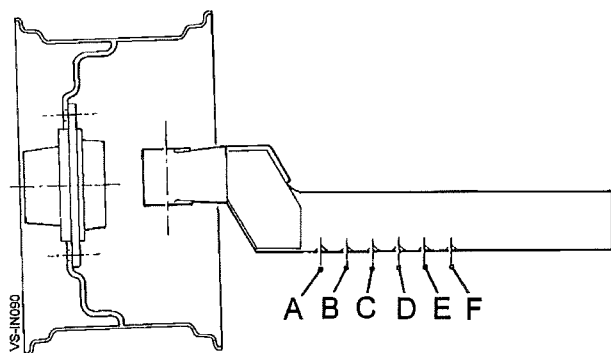


Fig 24



Row Width	RH Axle Position
76 cm (30")	A
79 cm (31")	B
81 cm (32")	C
84 cm (33")	D
86 cm (34")	E
89 cm (35")	F

Fig 25

Powered Axle

The optional hydraulic powered axle is designed to provide additional traction during work. The powered axle is capable of transferring up to 45 hp from the tractor PTO to hydraulically drive the harvester wheels giving a maximum speed of 5.5 kmh (3.5 mph). This is achieved by means of a load sensing, pressure compensated, variable displacement pump which provides the hydraulic oil flow to drive the wheel motors.



Ensure the wheel motor casings (item 1, fig 29) are filled with hydraulic oil before starting. Failure to do so may cause premature failure of the motors.

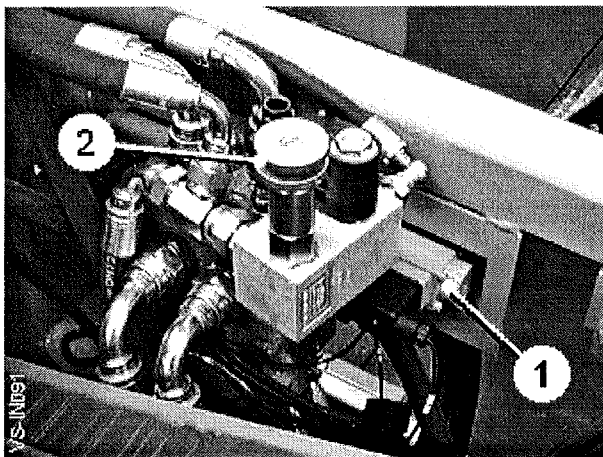


Fig 26

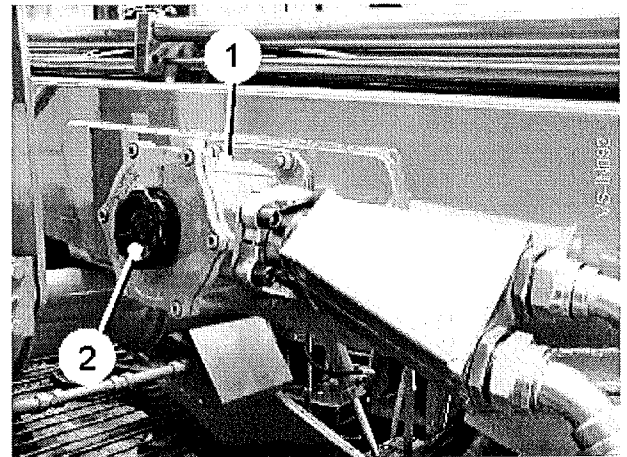


Fig 27

The wheels can be set to forward ◀, neutral or reverse ▶ by operating the 3-way 'Axle Drive' switch on the control box. When forward or reverse is selected the directional control valve (item 1, figure 26) mounted behind the rear RH guard door demands oil flow from the pump to provide 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 which is set on the external pressure control valve (item 2, fig 26). This valve allows a low operating pressure to be set which is adjustable to give the required drive assistance for normal harvesting. The forward drive can be matched to the tractor by using the speed control knob. Turn the control fully up and then, while in work, turn the knob down until the pressure gauge shows a steady reading. When the high pressure button ⊕ is pressed, the system operating pressure is increased to the setting of the main compensator within the pump.

Hydraulic oil for the system is supplied from the integral chassis tank. Oil feed to the pump is through the suction filter (item 1, fig 27).



Always ensure the suction filter knob (item 2, fig 27) is wound fully in clockwise before operating the harvester.

The powered axle pump (item 1, fig 28) is mounted to a double outlet splitter gearbox. Maximum pump output at 540 rpm PTO speed is 75-80 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 2, fig 28) which is pre-set 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 monitored on the pressure gauge (fitted to the main pressure pipe) while allowing the harvester to push against a braked tractor.



The pressure relief valve setting should never exceed 200 bar.



Each wheel motor is fitted with a grease ring (item 3, figure 29). To prevent the ingress of dirt and dust, pack the ring with grease daily using the two grease nipples.

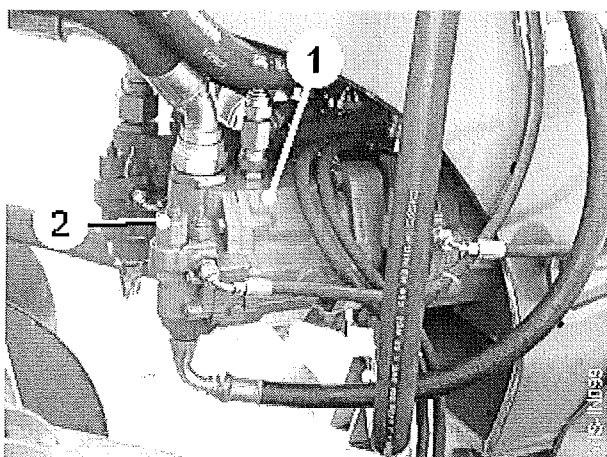


Fig 28

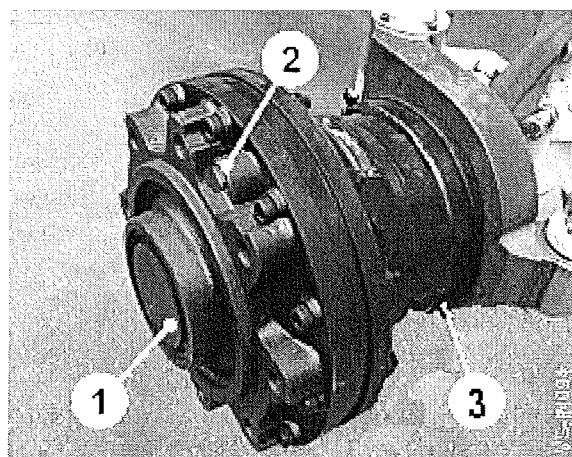


Fig 29

Bleeding / Filling Wheel Motors

Place the motor (item 1, fig 29) in a position in which one of the bleed screws (item 2, fig 29) 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.

Hydraulic Systems

Two separate hydraulic systems are fitted to the harvester. The hydraulic rams, discharge elevator, spreader or picking table are powered from the tractor external supply. The webs and the other hydraulically driven elements on the machine are supplied from the PTO driven pumps and the onboard oil supply. The only connection between the two hydraulic systems is 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 50 litres/minute is fed through the pressure filter (item 1, fig 30) into the flow divider section of the auxiliary valve bank (item 1, fig 30). The system will accept up to 80 litres/minute maximum. The valves for the digger lift rams, elevator swan neck and cleaner lift are proportionally controlled from the electrical system. The proportional valve (item 3, fig 30) which controls the discharge web and spreader motors has priority over the ram service valves. The flow rate through each ram service valve is controlled by the spool size and the individual flow settings. 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 valve block is capable of operation with open, closed centre or load sensed tractor systems.

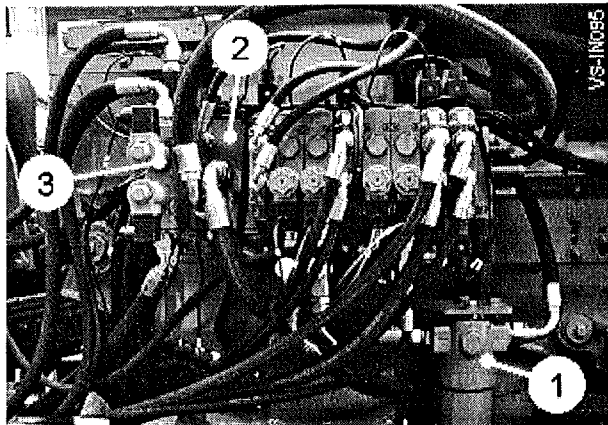


Fig 30

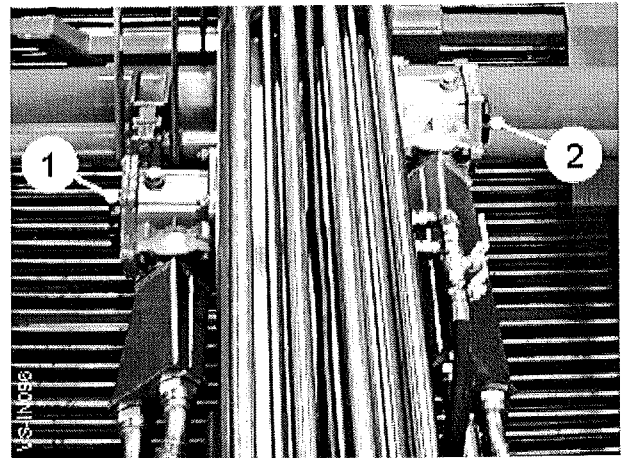


Fig 31

PTO Powered Hydraulic Circuits

Depending on the specification of the machine, three or four hydraulic pumps are mounted on the PTO splitter gearbox. Oil for these pumps is fed from the integral chassis oil reservoir. All the pumps are fed through the two suction filters submerged in the sides of the centre beam and feed to the valves through pressure filters.



When the machine is in use, the suction filter knobs (item 1 & 2, fig 31) must be wound fully in clockwise at all times.

Circuit 2

The LH front pump (item 1, fig 32) feeds the secondary circuit. The circuit has either a two, three or four section valve (depending on machine specification) mounted behind the LH front guard door. The first section of this valve block feeds the 2nd star separator module, and the final section feeds the 2nd web. Both of these sections are switched on/off from the control box, with the valve flow set on the display parameter adjustment.

Depending on specification, the additional sections in the valve are used to feed the optional powered diablo rollers, sweeping clod fingers or onion paddle.

Circuit 3

The LH rear pump (item 2, fig 32) feeds the roller cleaner unit.. From the pump the feed is into a double acting valve mounted behind the LH rear guard door. The forward speed is proportionally controlled from the control box to give speed adjustment. On/off control is on the control box, and also a manual reverse which allows the operator to reverse the rollers to eject a blockage. Connected into the cleaner forward feed is a pressure transducer which monitors the working pressure of the cleaner, and triggers the valve to reverse the cleaner if a blockage causes too high a pressure. This set pressure can be set on the display screen. From the diagnostic menu, it is possible to read the actual working pressure of the circuit.

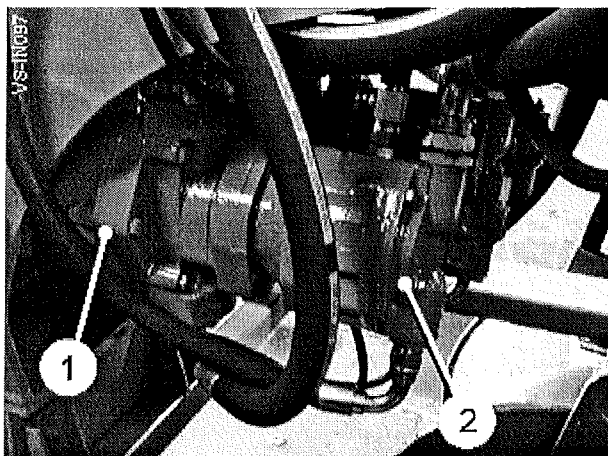


Fig 32

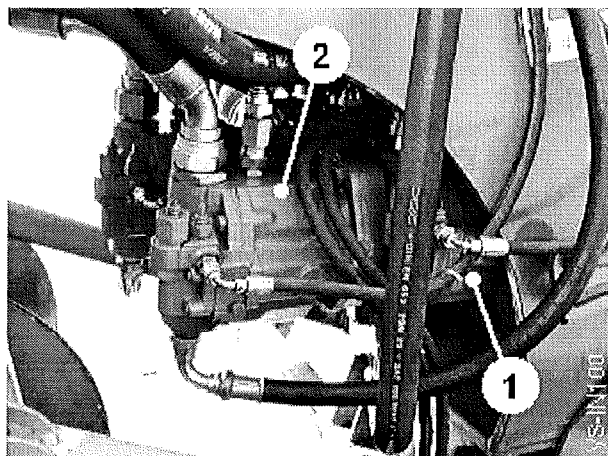



Fig 33

Circuit 4

The RH front pump (item 1, fig 33) powers the digger web, and the two sets of rotary agitators on the digger web. The control of all three of these circuits is with on/off, and proportional speed control from the control box. Digger web speed should be adjusted to give a consistent crop take-away from the shares, and the agitators used to the minimum to separate the loose soil from the crop.

Circuit 5

When fitted, the RH rear pump (item 2, fig 33) is used to supply the power driven axle. The double acting valve controlling the axle drive is switched for forward and reverse from the control box. For the forward drive a proportional control is also fitted to allow

the assist force to be set to match operating conditions. The  button will override the low pressure valve and bring the max system pressure to the pump maximum.

Electrical Control System

Control for the major functions of the Standen Vision XS are provided electronically by the switches mounted on the in-cab control box (item 1, fig 34) switching the valves on the harvester via a CAN-Bus control system. The functions can be monitored from the control box display screen (item 2, fig 34). Setting and monitoring can be carried out by following the instructions in the Control System Section.

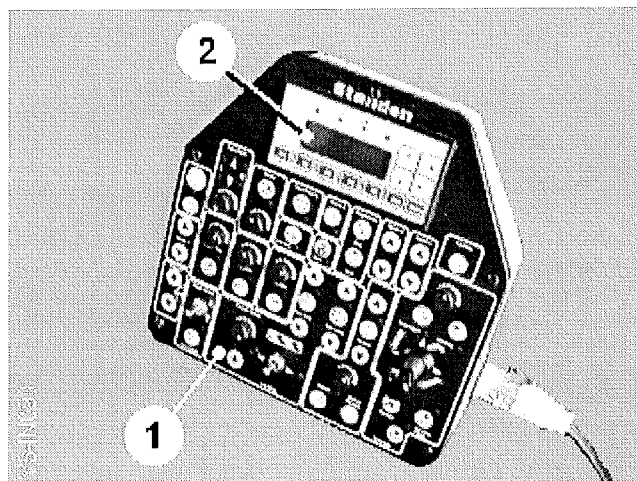


Fig 34

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.

Emergency Stop Button

When activated, the emergency stop button fitted at the rear of the harvester, depending on specification, shuts down all hydraulic drives and electrical controls.



The emergency stop button does not isolate any mechanically driven components.

The electrical control system will only function as a completely connected circuit. The emergency stop button completes the 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.

Checks before Starting a New Machine, Changing Tractor, or when Changing Field or Crop

1. Ensure the harvester is level when hitched to the tractor.
2. Ensure the hydraulic and electrical connections from the tractor are correctly made and are secure.
3. Ensure the tractor and harvester wheel settings match the rows to be harvested.
4. Ensure 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 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 2.5 cm (1") from the outer edge of the share blade.
8. Ensure the disc coulters are set parallel to each other.
9. Ensure the disc coulters are sharp, especially in soft ground or trash.
10. Ensure 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- tones 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 hand wheel 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 clods 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 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 2nd 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 gear on the LH end of the digger web shaft.

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 waterfalling or throwing.
6. Operate the harvester smoothly and make adjustments logically, one at a time, until the optimum sample is achieved.

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 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 the tractor hydraulic system is serviced in accordance with the manufacturers recommendations to prevent cross contamination of the harvester auxiliary system.

To extend the life of the hydraulic system, the hydraulic oil should be carefully monitored. The hot oil level should be kept at approximately 50mm below the bottom of the chassis mounted filler neck (item 1, figure 35), and covering the sight glass (item 2, figure 35). Maintain the filler level by topping up or refilling with Esso Nuto 46 Hydraulic Oil. The reservoir holds approximately 400 litres. If a high water content becomes apparent or a cloudiness in the oil, the hydraulic oil should be changed.

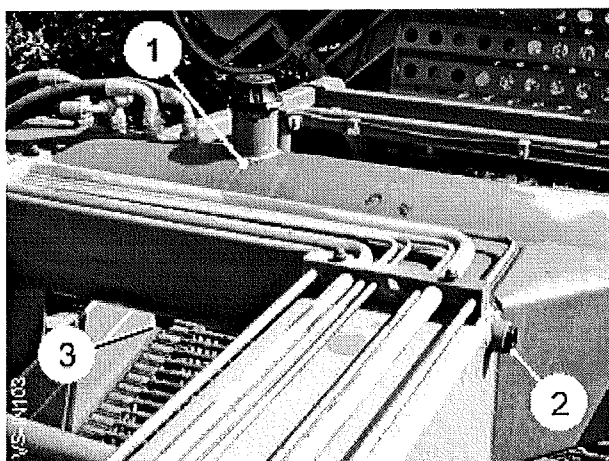


Fig 35

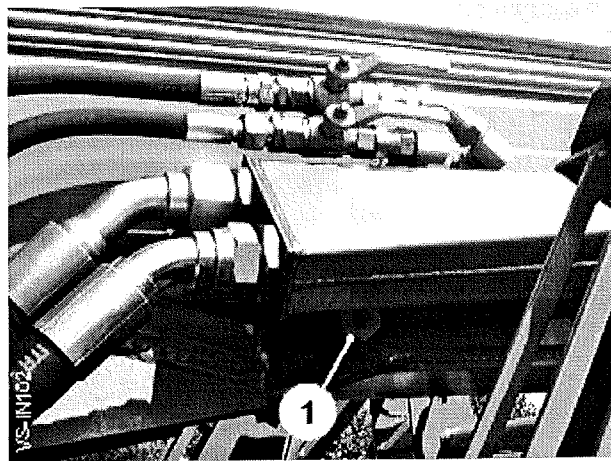


Fig 36

The oil reservoir magnetic plug (item 1, figure 36), located underneath the LH suction filter manifold, 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. An additional drain plug (item 3, figure 35) is used to drain the remaining oil left in the top section of the tank.



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

Pressure filter elements (item 1, fig 30, 37, 38, 39) should be replaced after the first 50 hours running time and then every 500 hours or annually thereafter.

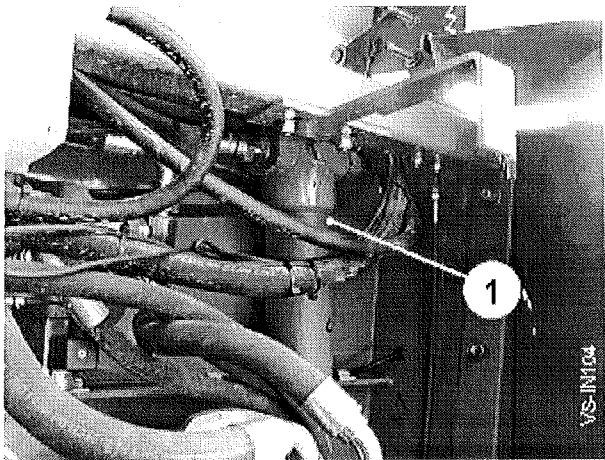


Fig 37

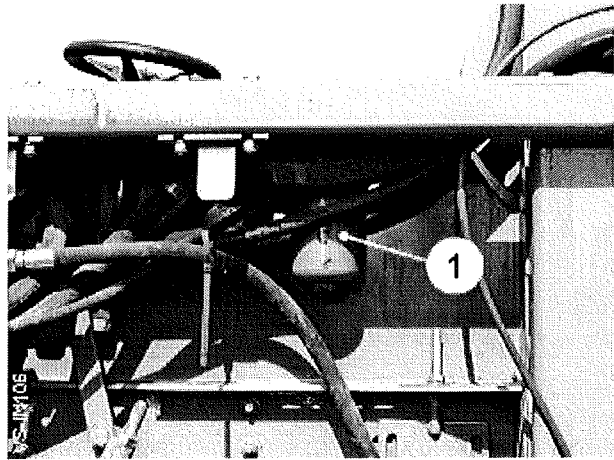


Fig 38

To replace a pressure filter element:

1. Switch off the tractor engine and apply the hand brake.
2. In the case of the auxiliary circuit pressure filter (item 1, figure 30), 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.

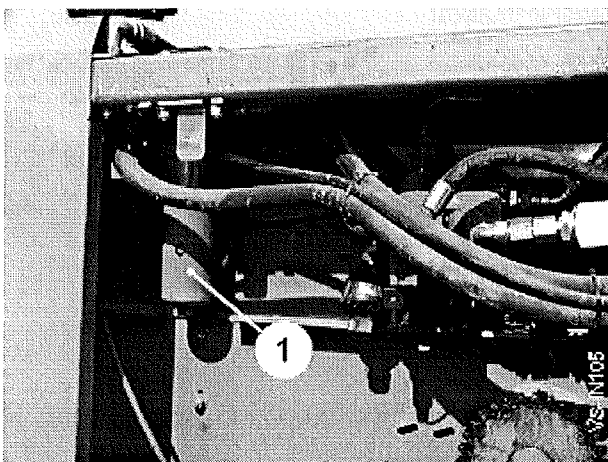


Fig 39

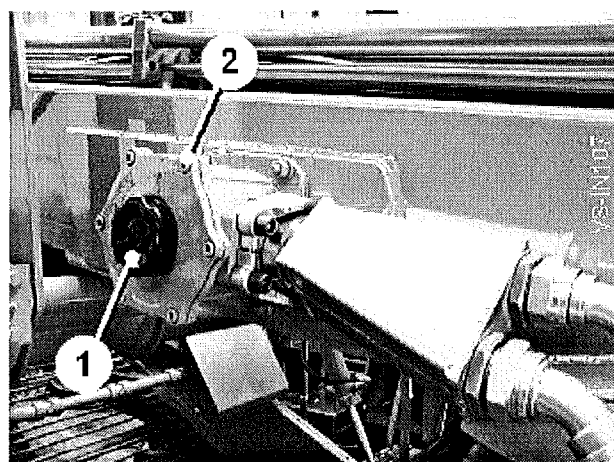


Fig 40

The suction filter elements should be replaced after the first 50 hours running time and then every 500 hours or annually thereafter.

The suction filter elements are serviced as follows:

1. Wind the suction filter knob (item 1, figure 40) fully out anti-clockwise to close the cut off valve within the filter housing.
2. Release the screws (item 2, figure 40) 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 1, figure 40) fully in clockwise to open the cut off valve.
6. Run the system and check for leaks.

Maintenance of Mechanical Drives

Drive chains must be maintained at the correct tension. The various adjustments are detailed within this handbook. 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 Electrical 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, and the control circuit boards may be damaged if incorrectly connected.

Setting the Rear Axle Self-centring

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 41) be in need of adjustment, the wheels will tend to centre to a RH bias. To correct the centre position, the cable can be reset by means of the cable adjuster on the axle king pin mounting. Release the bolts holding the cable anchor plate (item 2, figure 41) to the top of the king pin, and rotate the plate until the wheels return to the straight ahead position when operated. Retighten the bolts fully when the correct position is reached.

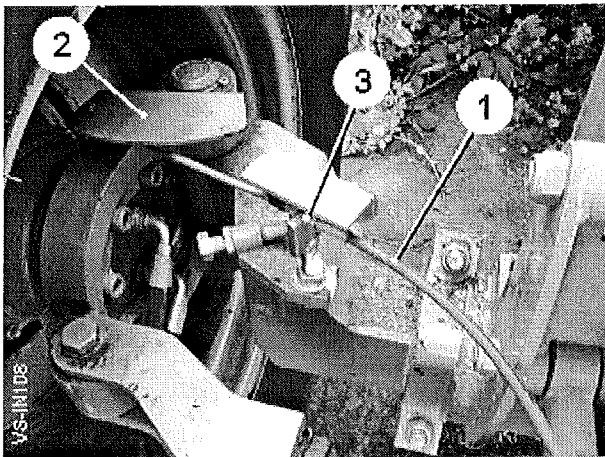


Fig 41

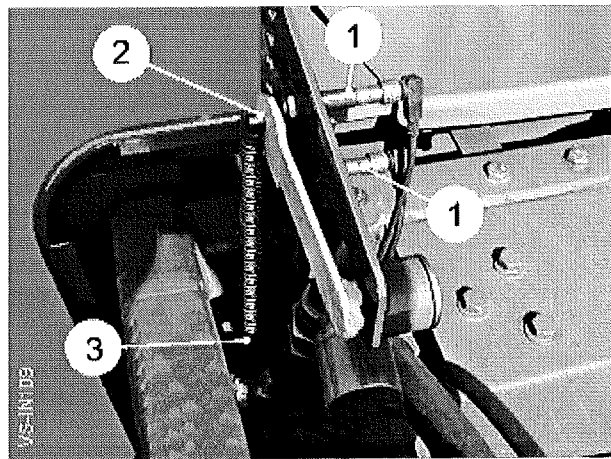


Fig 42

The setting of the proximity switches (item 1, figure 42) in the axle position indicator will only need adjustment 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 RH wheel is parallel to the side of the chassis at the front and back of the tyre.
2. Release the cable anchor plate (item 2, figure 41) and set the indicator pointer (item 2, figure 42) to the horizontal position.
3. Set the cable adjusters to the midway position by turning the locknuts (item 3, figure 41 & 42).
4. Lock the cable anchor plate (item 2, figure 41) to the king pin.
5. With an assistant holding down the 'Auto Centre' button, both light bands on the proximity switches (item 1, figure 42) should be off.
6. Check the centre position of the wheels returning from both LH and RH lock and fine tune this position by adjusting the relevant proximity switch. The upper edge of the indicator (item 2, figure 42) will be seen to cover the top proximity switch on LH lock and the lower edge will cover the bottom proximity switch on RH lock. The point at which the light band goes off is the point where the ram stops moving.
7. Fine tune the cut off position of the switches to ensure that the wheels centre from both directions.
8. If a proximity switch does not illuminate, it may need to be moved closer to the indicator (item 2, figure 42) by adjusting the switch body locknuts. Ensure that the proximity switch does not touch the indicator when everything is tight. A clearance of approximately 1mm should be set between the indicator and the face of the proximity switch. At no time should both proximity switches (item 1, figure 42) light up together. A neutral band must always be present where both switches are off.

Cleaner Unit Oil Seal Replacement

The cleaner unit roller shafts (item 1, figure 43) are each fitted with an oil seal (item 2, figure 43) 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 43) 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 43) until the seal protrudes approximately 1-2mm beyond the ring face (see figure 43). Slide the compression ring complete with seal over the roller shaft (item 1, figure 43) and locate the seal into the aperture.
5. Locate the slide hammer (item 4, figure 43) 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.

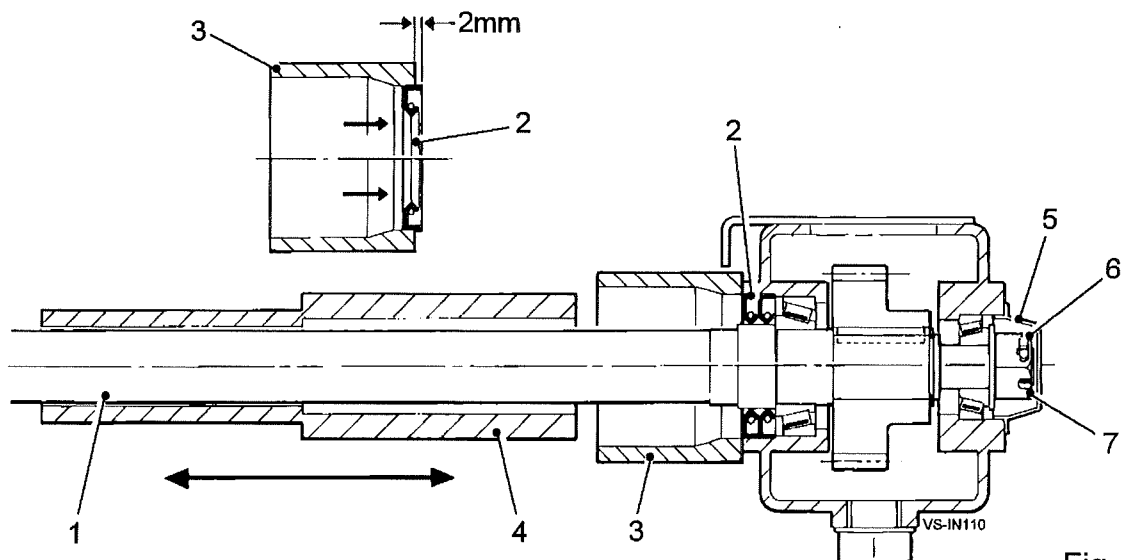


Fig 43

Tightening the Cleaner Bearings

If excessive play can be felt at the end of a roller shaft (10-15mm), the 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 5, figure 43).
2. Remove the split pin (item 6, figure 43) from the castellated nut (item 7, figure 43) and tighten the nut to a torque of 22 lb/ft.
3. Check the roller shaft (item 1, figure 43) again for free play.
4. Refit the split pin (item 6, figure 43) 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. Keep the split halves of the sprockets in the correct pairs to prevent mis-match when fitting.

Machine Lubrication

Regular lubrication will ensure that the Standen Vision XS provides a long and efficient service life. Depending on soil and weather conditions, the service schedule can vary. It is recommended that the harvester be 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. Optional automatic greasing kits can be fitted to the machine and are recommended for machines covering large acreages to reduce maintenance time.

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. The grease nipple locations are indicated on the lubrication diagram (fig 44).

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.

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 front gearbox should be checked occasionally and topped up with EP90 gear oil.

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

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.

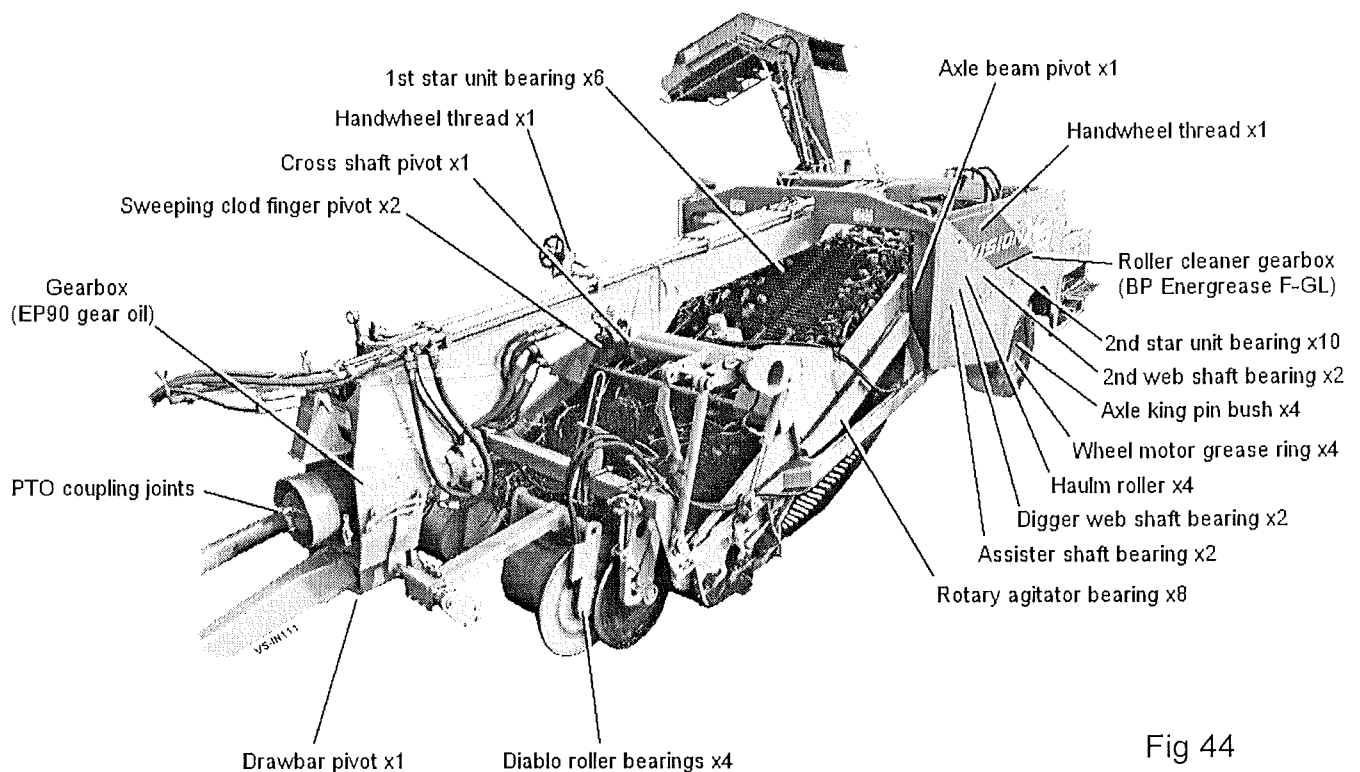


Fig 44

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
Wheel motor grease rings	Lubricate

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 elements
Suction filters	Clean or replace filter elements
Gearboxes	Change oil

Every 500 hours (or annually)

Pressure and suction filters	Replace filter elements
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
Machine	Store in a dry place
Control box	Remove and store in a dry place

Machine Nut and Bolt Tightening Torques

Standard axle wheel nuts	325 lb/ft
Powered axle wheel nuts	398 lb/ft
Cleaner roller shaft nuts	22 lb/ft
M6 nyloc zinc plated nut	10 lb/ft
M8 nyloc zinc plated nut	23 lb/ft
M10 nyloc zinc plated nut	44 lb/ft
M12 nyloc zinc plated nut	87 lb/ft
M16 nyloc zinc plated nut	208 lb/ft
M20 nyloc zinc plated nut	380 lb/ft
M24 nyloc zinc plated nut	690 lb/ft
M6 bolt/steel nut	7 lb/ft
M8 bolt/steel nut	19 lb/ft
M10 bolt/steel nut	38 lb/ft
M12 bolt/steel nut	70 lb/ft
M16 bolt/steel nut	170 lb/ft
M20 bolt/steel nut	325 lb/ft
M24 bolt/steel nut	565 lb/ft

Dimensions

	Unmanned	Manned
Length:	9.75 m	11.0 m
Width (in transport):	2.90 m	2.90 m
Height (in transport):	3.20 m	3.20 m

Technical Data

	Unmanned	Manned
Weight:	7.8 tonnes	8.4 tonnes
Minimum tractor power requirement:	100 hp	120 hp
Minimum tractor hydraulic flow rate:	50 litres/minute	50 litres/minute
Harvester oil reservoir capacity:	400 litres	400 litres
Tyre pressure:	36 psi (16.9x24) 65 psi (18x19.5)	36 psi (16.9x24) 65 psi (18x19.5)

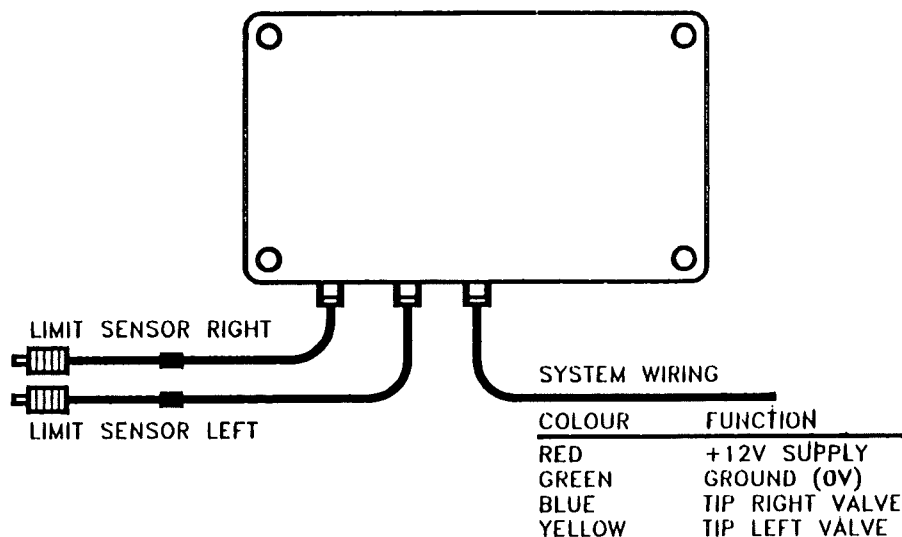
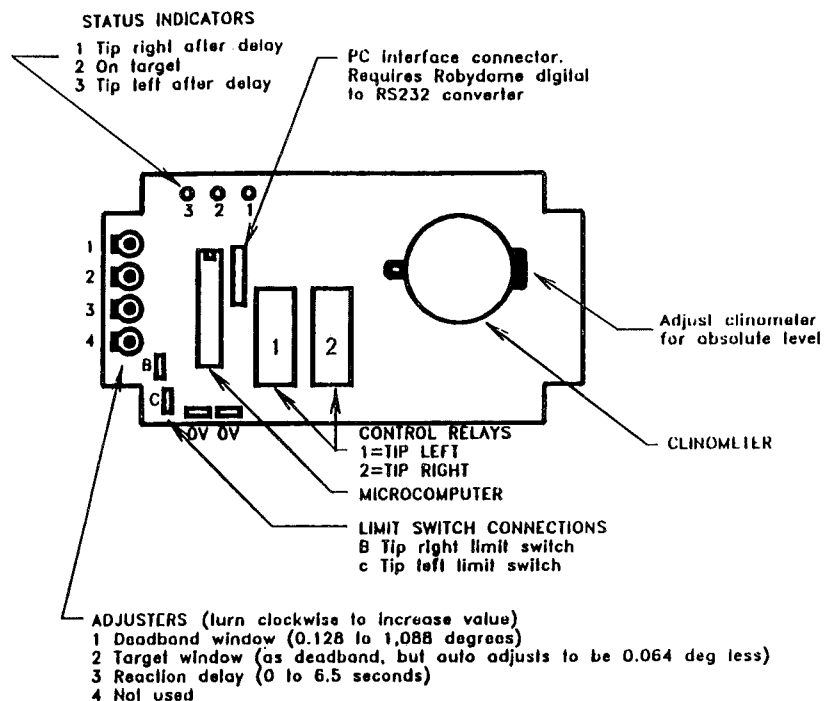
Standen Engineering's policy of continual product development means that specifications may be altered without prior notice. All dimensions are approximate.

DIAGRAMS

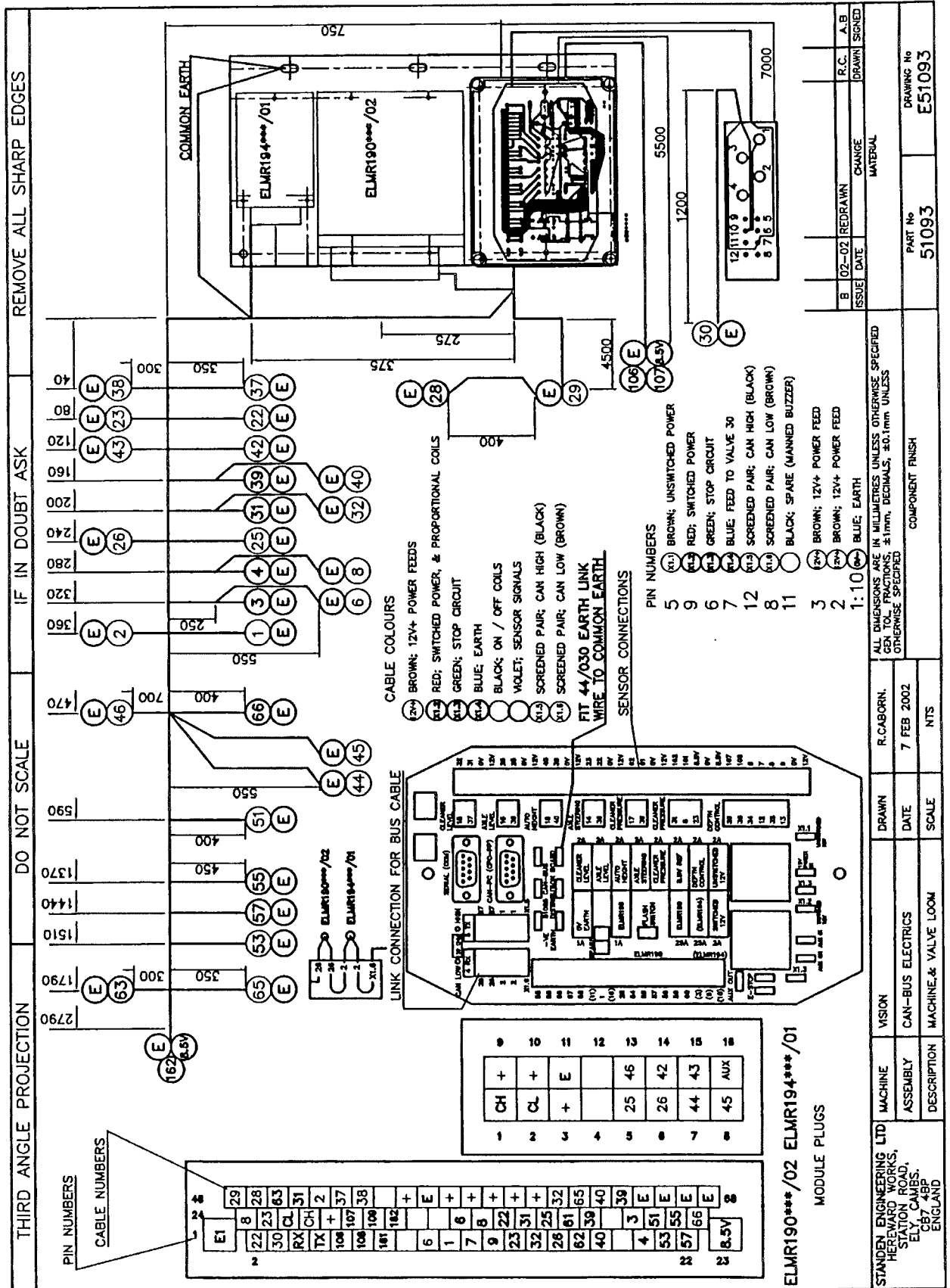
Axle level controller	2.1
Vision machine and valve loom	2.2
Vision XS machine and valve loom	2.3
Tractor powered hydraulics (circuit 1)	2.4
Secondary hydraulics (circuit 2)	2.5
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Powered axle hydraulics (circuit 5)	2.8
Harvester hydraulics block diagram	2.9

Axle Level Controller

VIEW OF INTERNAL PCB ASSY FOR LEVEL SENSOR 5201183

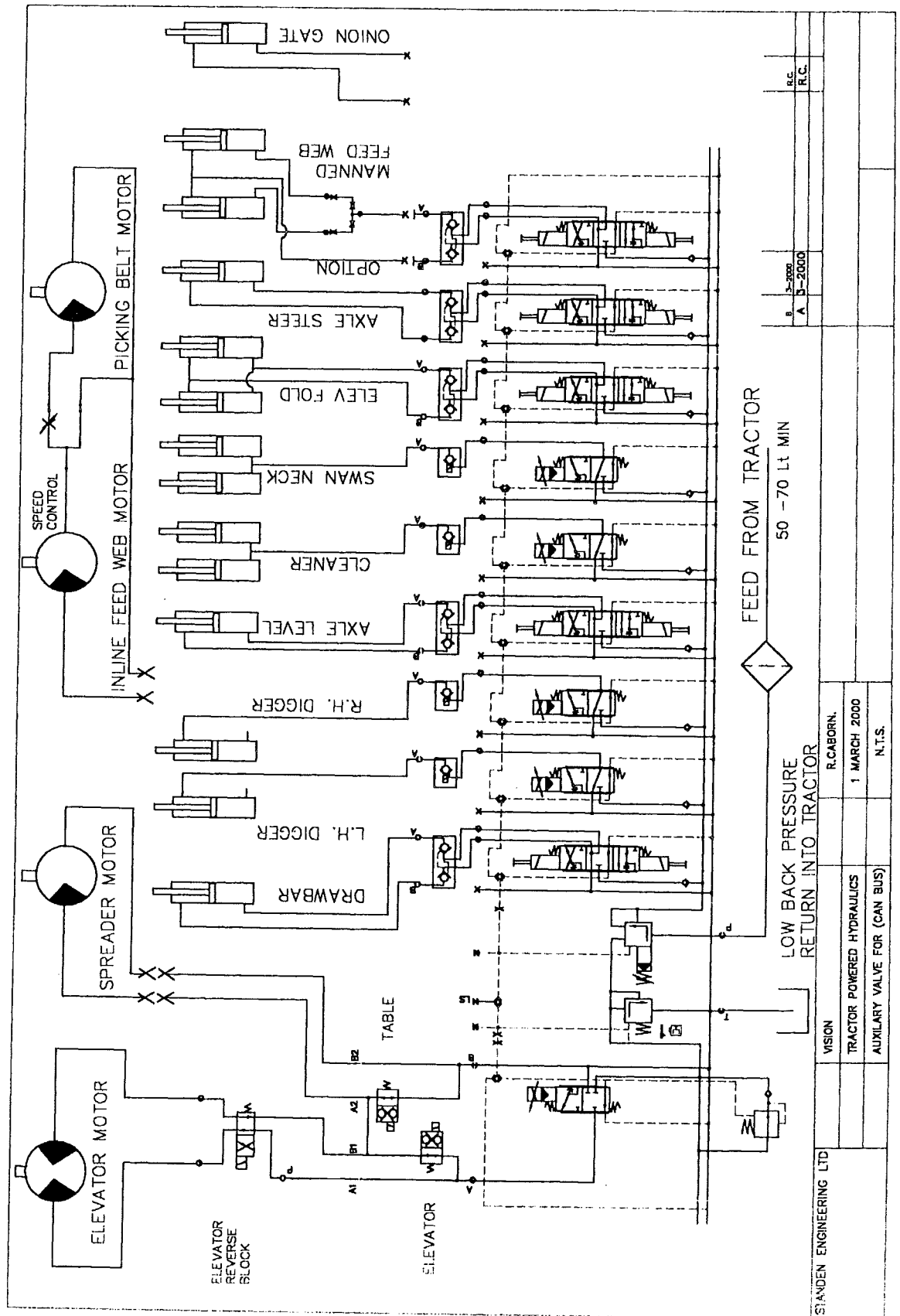


Vision Machine and Valve Loom

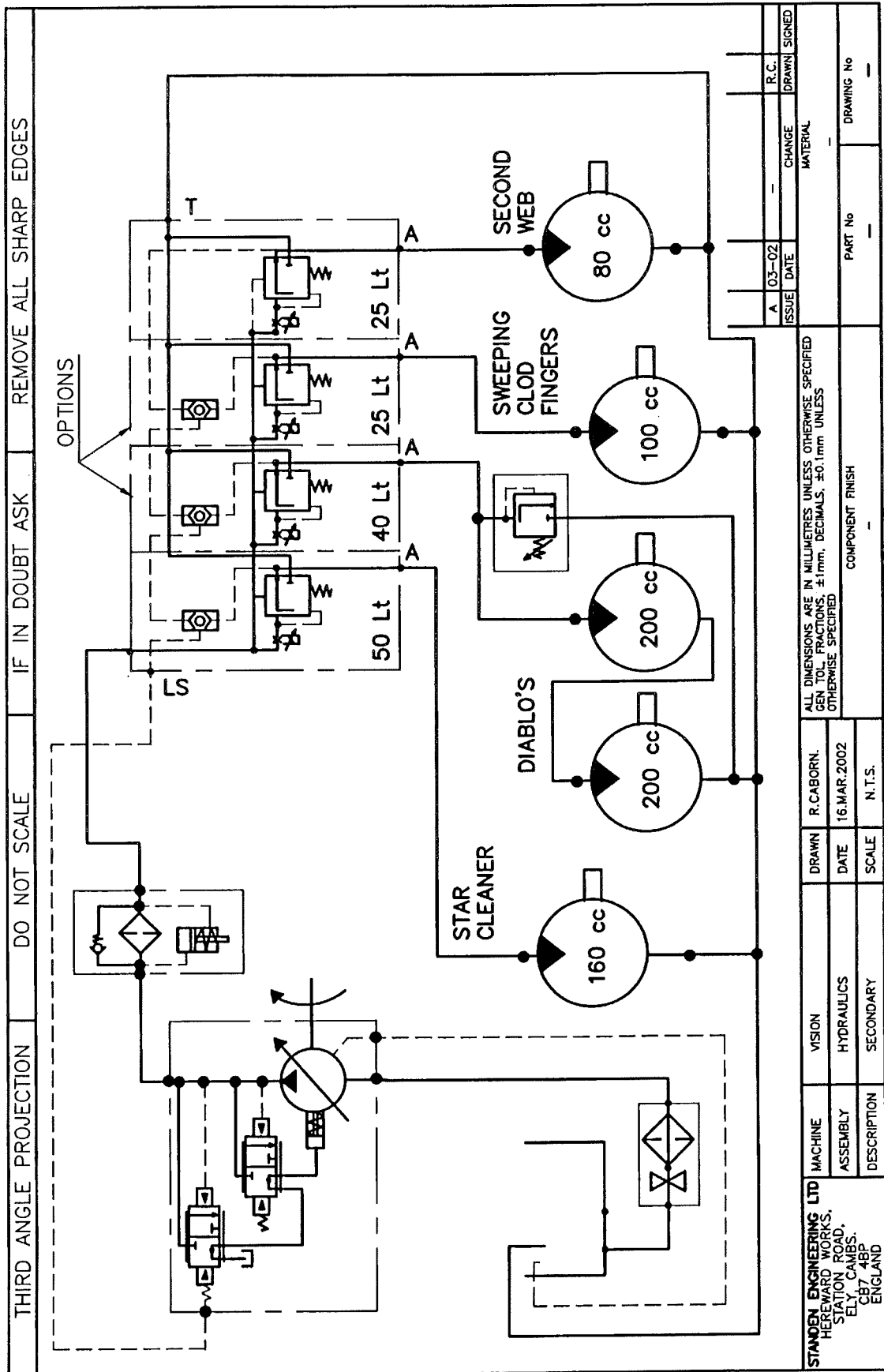


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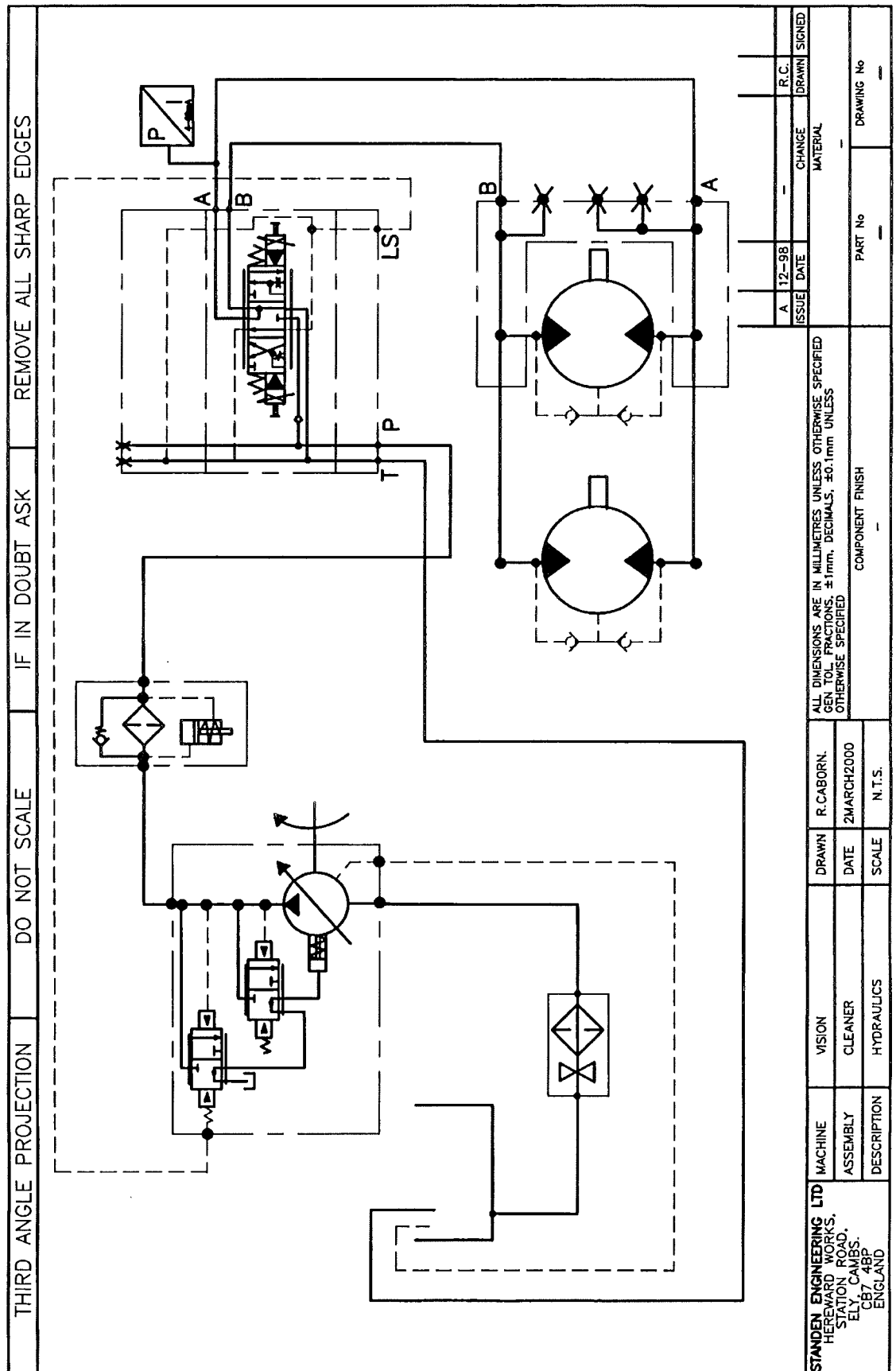
Tractor Powered Hydraulics (circuit 1)



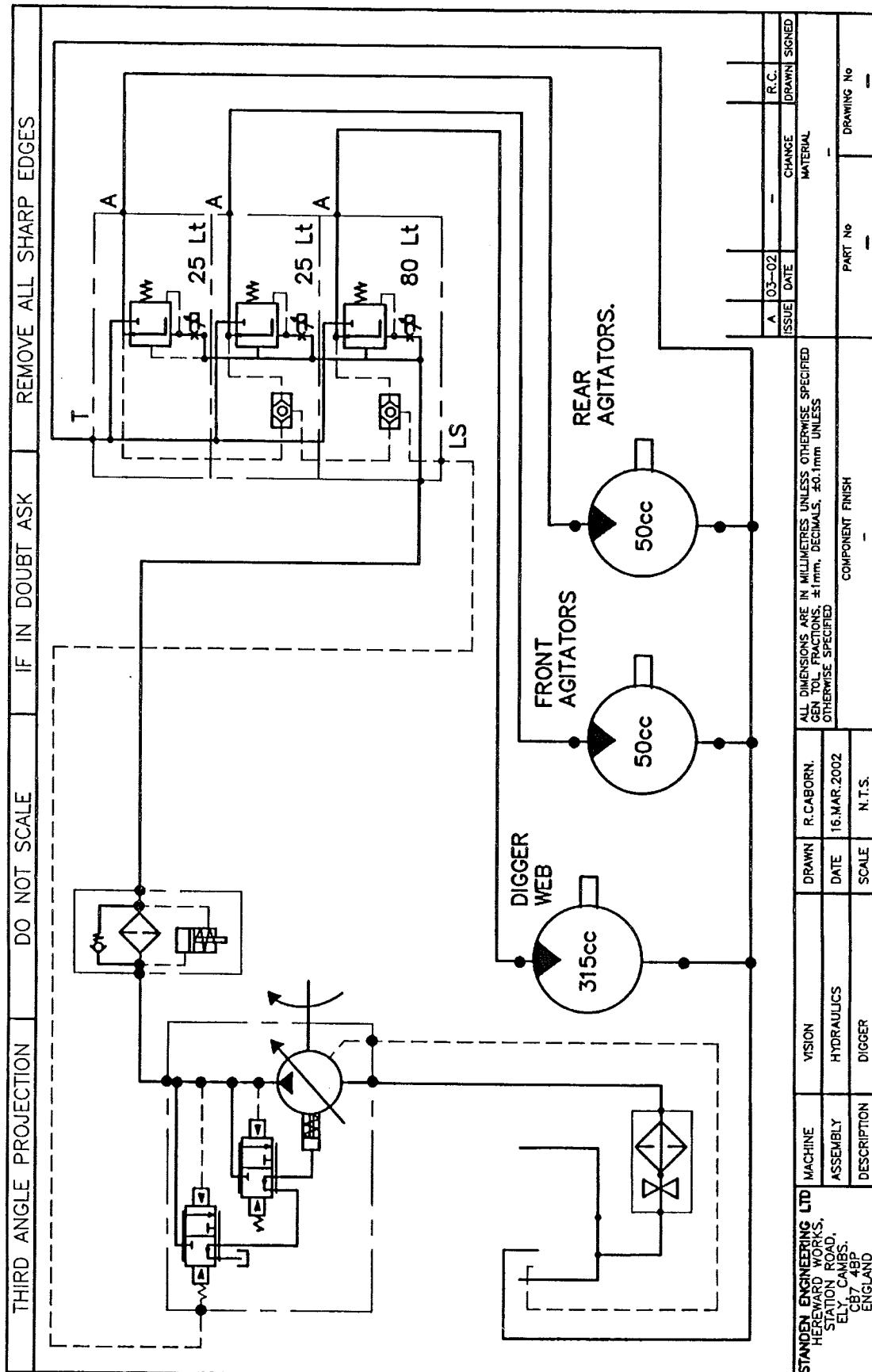
Secondary Hydraulics (circuit 2)



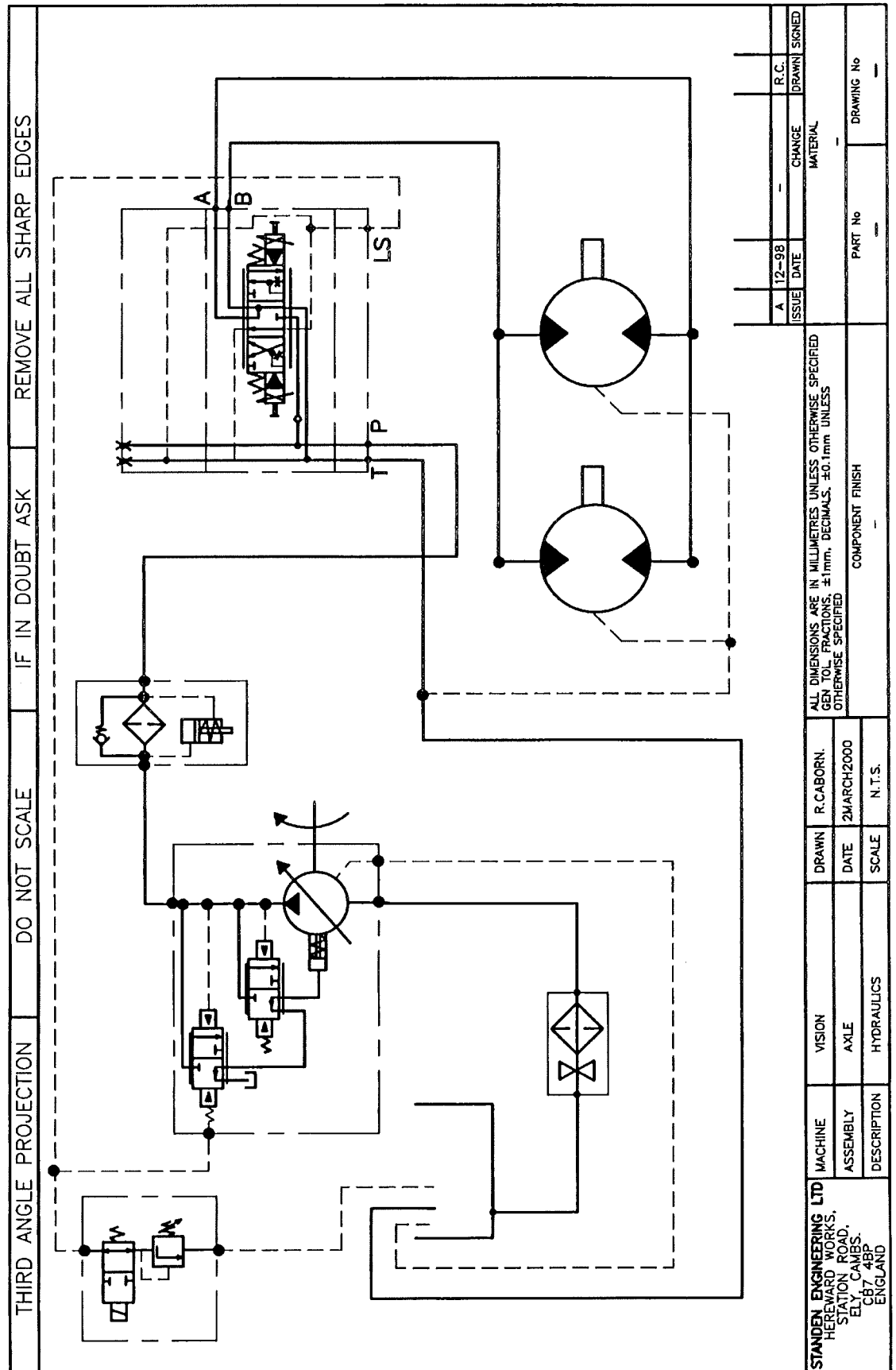
Roller Cleaner Hydraulics (circuit 3)



Digger Web Hydraulics (circuit 4)



Powered Axle Hydraulics (circuit 5)



[illegible]