



MEGASTAR GEN-2

De-stoner / De-clodder

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IMPORTANT

This operator's 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 operates 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 Megastar Gen-2. 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 lists 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 Megastar Gen-2 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 list of precautions should therefore be brought to the attention of all persons operating and working on the machine. The list is not exhaustive. All machinery is potentially dangerous and great care must be exercised by the operators at all times. Standen Engineering Limited will not accept liability for damage or injury caused by their products except when such liability is specifically imposed by English statute.



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

Always check that the machine has been correctly mounted to the tractor before setting off on operations.

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.

In dry, dusty conditions it is prudent to use a tractor with an enclosed cab.

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.

On machines fitted with a discharge elevator, when folding and unfolding, ensure there are no overhead restrictions and that everyone in the vicinity is aware of your intentions.

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

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.



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.

Never operate the machine in a state of disrepair.

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.

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

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.

Regularly check hydraulic hoses for chafing or damage and replace as necessary.

Care must be taken when carrying out any work on the hydraulic system. Even when stopped and disconnected from the tractor, residual pressure will exist within the hydraulic system. Therefore, before commencing any work on the hydraulics ensure that the system is free of residual pressure by carrying out the 'pressure dump' procedure outlined within this handbook.

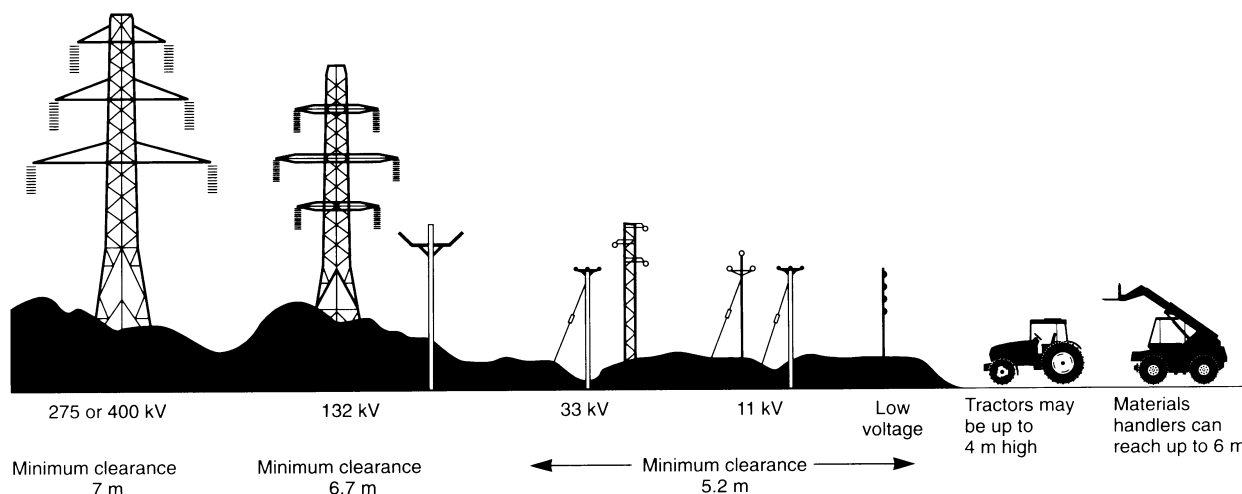
Before transporting the machine on a public road, set the hydraulic levelling to its lowest position, fully raise the shares, lock the cross conveyor into the transport position, set the drawbar and steering to the straight-ahead position and switch off the control box to avoid inadvertently operating any machine services. Finally, ensure road lights are clean and in good working order.

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

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).

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

HSE priced publications are also available from good booksellers.

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

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

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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Tractor Wheel Settings

Both front and rear tractor wheels must be set to run down the centre of the wheelings and must span the bed being lifted. Consult your tractor handbook for the correct procedure for setting the tractor wheels.



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.

Drawbar

The drawbar (item 1, fig 1) is designed to be attached to the tractor's swinging drawbar. The tractor drawbar should be fixed in its central position. Consult the tractor manufacturer's handbook for details. The machine drawbar eye should be checked regularly to ensure it is free moving and kept greased to prevent excessive wear.



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

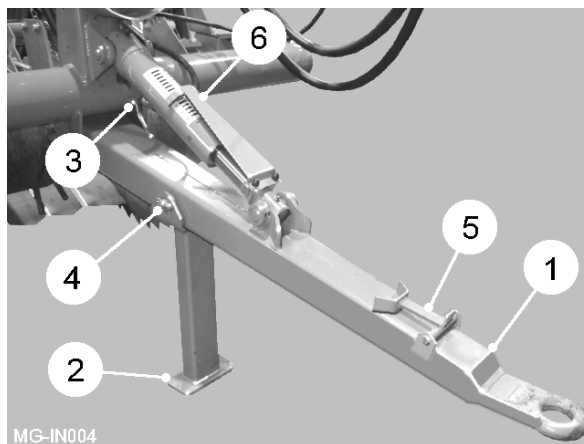


Fig 1

The stand (item 2, fig 1) is provided so that the machine is held at a suitable height for safely coupling to the tractor. To adjust the height, connect the hydraulic hoses to the tractor and open the drawbar transport lock valve (item 3, fig 1). Operate the control box share depth control to achieve the correct drawbar height.

Once securely attached to the tractor, raise the machine and remove the stand locking pin (item 4, fig 1). Store the stand on the LH side of the front chassis using the locking pin.



When disconnecting from the tractor always ensure the stand is positioned on firm ground. Both wheels should be chocked at front and rear before removing the drawbar pin. Always store the stand on the machine. You never know when it will be needed.

PTO Shaft

The machine is designed to operate with the tractors 540 rpm, 6 spline, 1 3/8" PTO output shaft.



PTO speeds greater than 540 rpm will cause damage to the system and if exceeded may invalidate the warranty.

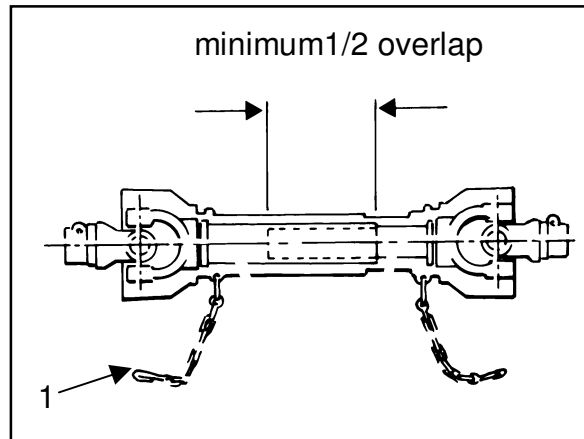


Fig 2

Fit the two halves of the PTO shaft onto their respective drive shafts on the machine and tractor. Check the shaft length by turning the tractor fully in both directions with the machine in its working position while attached to the tractor's pick-up hitch. Ensure the sliding tubes, when fully extended, have an overlap at least half the closed length (see figure 2). Ensure that the ends of the sliding tubes when at the shortest point are not in contact with other parts of the PTO shaft. If necessary, shorten both tubes and guards equally to achieve end clearance at the minimum length position.

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

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

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

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

Ensure that the safety chains (item 1, fig 2) used to prevent the guards from turning, are fixed to the tractor and implement in such a way that they will not be stretched when the drive shaft is at maximum articulation. When disconnected from the tractor, position the PTO shaft on the drawbar rest (item 5, fig 1).

Hydraulic Connection

The feed and return hoses from the machine must be connected to the respective external service connections of the tractor hydraulic system. Both feed and return hoses have labels with arrows indicating the direction of oil flow.

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

Required oil flow from tractor system	minimum	70 ltr/min
(Set to constant pump)	maximum	100 ltr/min
(For flows greater than 100 ltr/min consult your officially appointed Standen dealer)		

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

Open/Closed Centre Hydraulics

Two types of hydraulic system are currently in use by tractor manufacturers, namely OPEN CENTRE or CLOSED CENTRE configurations. Consult the tractor manufacturers handbook or dealer for further information.

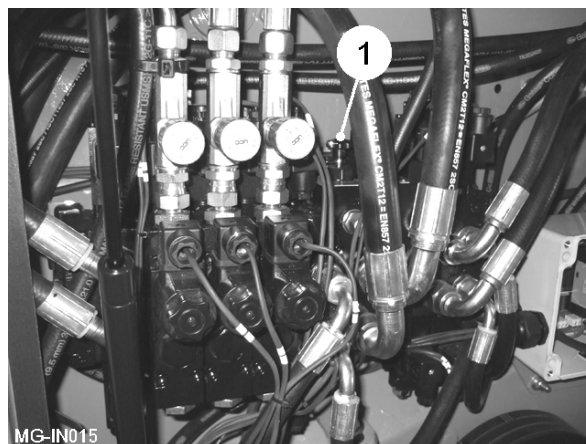


Fig 3

The main hydraulic valve bank, situated behind the rear LH guard of the machine, incorporates an adjustable screw (item 1, fig 3) which enables easy changing from closed to open centre and vice versa. For closed centre configuration tractors, turn the screw clockwise until fully closed. For open centre, turn the screw anticlockwise until fully out.

Electrical Control System

Mount the control box (item 1, fig 4) securely inside the tractor cab in a position where it is comfortable to operate when seated. Connect the machine control harness between the control box and machine ensuring it is safely routed into the tractor cab. Connect the control box power supply cable to the tractor's 12V d.c. electrical plug (if fitted) or directly to the tractor battery, blue lead to negative (-) brown lead to positive (+). **The electrical equipment should only be connected to a 12V d.c. supply.**

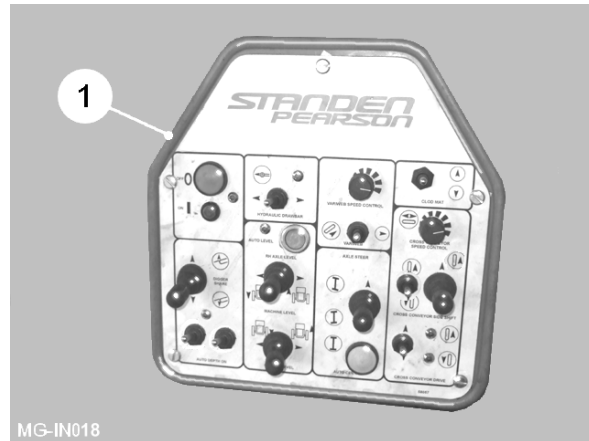


Fig 4



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.

Control for the major functions of the Megastar Gen-2 are provided electronically by the switches mounted on the control box. The function of each switch is listed below.

Hydraulic Drawbar (optional)

The hydraulic drawbar push button activates/deactivates the hydraulically damped drawbar system. The LED is illuminated when the system is switched on.

Digger Share Raise/Lower

The 3 position spring toggle switch manually raises/lowers the digger assembly increasing/decreasing the depth of the shares below the soil. Releasing the switch to the central position leaves the share depth at the present setting. Setting the switch to the locked lower position enables the depth ram to free float.

Auto-Depth

With the digger share switch set in the lower position, the push button activates/deactivates the digger share auto-depth system. The share depth is automatically adjusted by the movement of the depth roller. The LED is illuminated when the system is switched on. Operating the manual digger share raise/lower switch will override the auto-depth system. The auto-depth indicator lights show when the depth sensors are operating.

Axle Steering

The axle steer switch manually steers the machine wheels left/right. The auto-centre button when pressed operates the self-centring circuit to automatically set the wheels to the straight-ahead position.



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

Machine Level

The two axle level switches operate the LH and RH levelling rams (item 1, fig 5). Moving the switch left will lower the LH side of the machine. Moving the switch to the right will raise the machine.

Cross Conveyor Side Shift & Fold

The switch marked 'lift to operate' sets the adjacent 3 position toggle switch to conveyor side-shift function or to conveyor fold function.



Never operate the side shift function with the conveyor folded. Ensure the conveyor is moved fully to the LH discharge position before folding up the conveyor.

Cross Conveyor Drive

The switch marked 'cross conveyor drive' starts/stops the cross conveyor web to discharge to the LH or RH side of the machine. With the switch in the centre position the discharge web is stopped. Move the switch up to discharge to the RH side of the machine, or down to discharge to the LH side. The corresponding LED will illuminate. The dial marked 'cross conveyor speed control' sets the speed of the discharge web. Turn the dial clockwise to increase or anticlockwise to decrease the speed.

Rhizome Discharge Elevator Fold (optional)

An optional discharge elevator can be fitted in place of the cross conveyor. The 3 position spring toggle switch sets the elevator from the transport to discharge position.



Before operating the discharge elevator, ensure everyone in the vicinity is aware of your intentions and that there are no overhead restrictions. See the HSE information sheet within this handbook.

Rhizome Discharge Elevator Drive (optional)

The switch marked 'discharge elevator drive' starts/stops the elevator web to discharge the lifted material into a trailer running alongside. The dial marked 'elevator speed control' sets the speed of the discharge web. Turn the dial clockwise to increase or anticlockwise to decrease the speed.

Clod Mat (optional)

The switch marked 'clod mat' raises/lowers the clod mat blocks. Move the switch up to raise or down to lower the clod mat.

Vari-Flow Web (optional)

The push button starts/stops the vari-web. The LED is illuminated when the unit is running. The dial increases/decreases the speed of the web. Turn the dial clockwise to increase or anticlockwise to decrease the speed.

Machine Wheel Settings

The machine wheels must be set for work in a specific bed width. The wheels should be set to match the tractor wheels.

Each wheel is carried by a wheel leg pillar (item 2, fig 5) The pillars have a top and bottom flange plate containing a series of fixing holes. Moving the pillars in or out adjusts the wheel centres to suit the selected bed width. Both wheel legs must be set to the same hole positions so that the wheels remain symmetrical about the centre-line of the machine (see figure 7). Lifting equipment must be used when setting the wheels.



Before commencing axle adjustment, ensure adequate jacks, axle stands of minimum 2500 kg capacity, wheel chocks and suitable lifting equipment are available.



It is important that the machine is correctly fitted to the tractor and that the tractor handbrake is applied whilst axle adjustments are made.

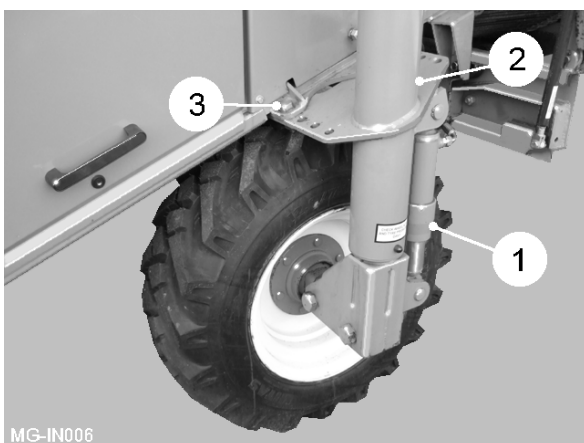


Fig 5

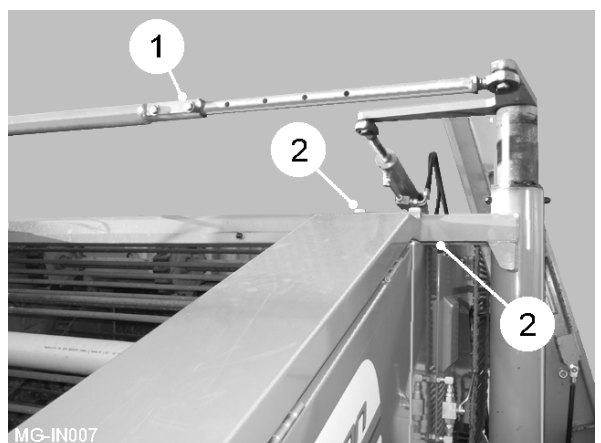


Fig 6

Place chocks at the front and rear of the opposite side wheel to the one being adjusted. Jack up the machine and place an axle stands under the chassis and lower the jack to allow the axle stands to take the weight of the machine.

Release the track rod locking bolts (item 1, fig 6) and remove the flange plate mounting bolts (item 3, fig 5 & item 2, fig 6). Using lifting equipment, carefully slide the leg pillar to the required position. Refit the mounting bolts (item 3, fig 5 & item 2, fig 6) through the relevant hole in the flange plates. Repeat the procedure for the opposite wheel. Finally, set the track rod to the correct length and secure using the locking bolts. Ensure all nuts and bolts are fully tightened after adjustments have been completed.

	Machine with Unbraked Axles	Machine with Braked Axles
A	Transport / 60"	Transport
B	64"	60"
C	68"	64"
D	72"	68"
E	76"	72"
F	80"	76"
G	-	80"

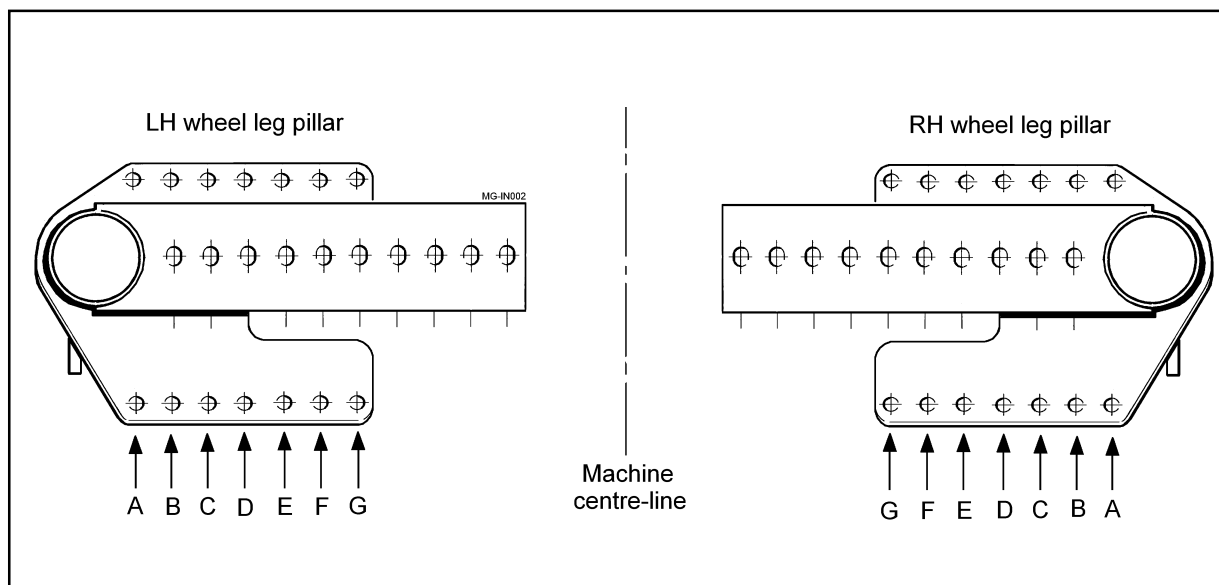


Fig 7

Manual/Automatic Depth Control

Manual/automatic depth control ensures an even depth of soil in the finished bed. The depth roller (item 1, fig 8) runs on top of the preformed bed following the contours. On machines with manual depth control a turnbuckle is fitted between the chassis and depth roller frame. Adjusting the length of the turnbuckle effects the digging depth of the shares. On machines with automatic depth control, the depth roller is linked to a trigger plate (item 2, fig 8) which activates a pair of proximity sensors (item 3, fig 8) which then, via the valve block, actuate the share depth ram. Turning the adjuster handle (item 4, fig 8) changes the relationship between the depth roller and the trigger plate thus adjusting the working depth. An optional linear actuator can be fitted in place of the handle mechanism allowing adjustment from the in-cab control box. A depth indicator (item 6, fig 1) is fitted to the share depth ram giving the operator a visual indication of the action of the sensing system.

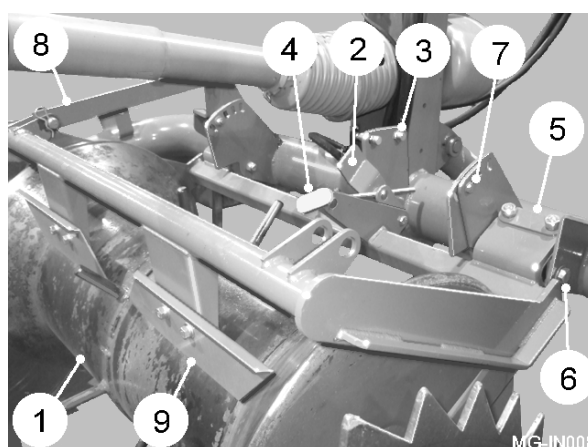


Fig 8

The depth roller frame pivots on two rubber torsion mountings (item 5, fig 8). By adjusting these mountings it is possible to adjust the amount of pressure the roller exerts on the soil. The adjustment is made with the machine raised out of work with the roller hanging freely. Loosen the torsion mounting bolts (item 6, fig 8) and remove the pressure setting bolts (item 7, fig 8) and raise the roller until the holes align with the chosen hole setting and refit the bolts.



A transport strap (item 8, fig 8) is fitted between the depth roller frame and the chassis. The strap must be removed before commencing work.

The scrapers (item 9, fig 8) are fitted to the to eliminate dirt build up on the roller. Set the scrapers as close as possible to the roller surface but ensure they do not restrict the roller from turning.

Discs

The discs (item 1, fig 9) cut and contain the soil while feeding it over the shares onto the stars. Both discs should be adjusted so that the inner faces are approximately 5 mm from the outside edge of the share blades. To adjust the discs, slacken hub clamp bolts (item 2, fig 9) and slide the disc to the required position. Retighten clamp bolts.

The disc scrapers (item 3 fig 9) will need to be adjusted to suit the new disc position. To do this, slacken the scraper bracket bolts (item 4 fig 9) and reposition the scraper until just clear of the disc surface and retighten. As the scraper wears it can be adjusted closer to the disc by slackening the bolts (item 5 fig 9).

The pressure setting of the discs is set on the spring rod (item 6 fig 9). The spring pressure should be sufficient to keep the disc turning in the soil while at the same time allow it to rise up over any obstructions. Spring pressure is increased/decreased by raising/lowering the spring rod bottom locknuts (item 7, fig 9). Maximum disc height is limited by the depth stop (item 8, fig 9).

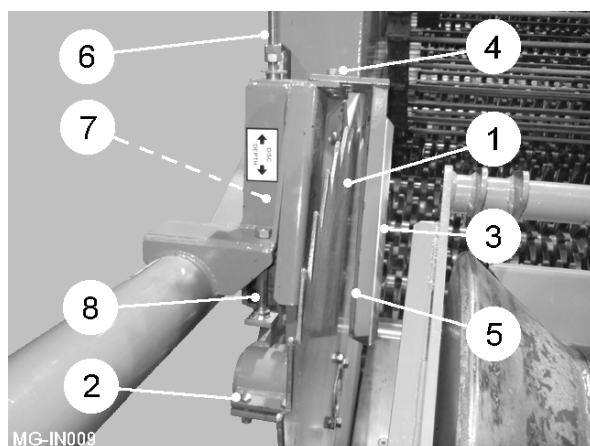


Fig 9

Shares

The machine is fitted with a 7-piece share blade arrangement. There are a number of different blade lengths and shapes available. The outside blades come in two different widths, standard and wide, to cope with the variety of bed widths. In general the standard outer blade is fitted for the narrower bed widths while the wide outer blade is fitted for the wider bed widths. If blade widths are altered then the disc positions will have to be adjusted to suit.

Vari-Flow Web (optional)

The vari-flow web consists of a hydraulically driven web mounted above the star bed. The web is designed to assist a smoother flow of soil and stones in conditions such as on steep slopes. Speed is adjusted from the control box. In hilly conditions the web will assist the waste material over the back of the star bed rather than through the stars because all soil has been extracted. Too little speed may cause a soil build up on the front stars. By controlling the speed it is possible on cloddy land to run the web slightly slower than the flow to help break up more of the clod.

Clod Mat (optional)

The clod mat consists of two rows of heavy duty rubber blocks mounted on pivoting rails suspended above the star bed. The blocks hold down clods onto the stars to assist the crumbling effect. On manual adjustment machines, the angle of the blocks is set using the adjuster arm (item 1, fig 10) and index plunger (item 2, fig 10) behind the LH centre guard. An optional linear actuator can be fitted allowing adjustment from the in-cab control box. The angle of one row of blocks in relation to the other can be changed by adjusting the link rod behind the RH centre guard.



Never attempt to manually adjust the clod mat angle while the drive belts and pulleys are in motion.

Boulder Box (optional)

The rear boulder box is recommended in conditions where many large stones and boulders are encountered and it is advisable to remove them from the field rather than leave them in the trenches between the formed beds. The unit consists of two rows of widely spaced 6 finger stars and a single row of 10 finger stars. The 6 finger stars allow normal material to fall through onto the cross web while large stones or boulders are transported over the 10 finger stars into the boulder box. The boulder box can then be emptied at a convenient point. The emptying mechanism is operated by two single-acting rams connected via a quick release coupling to the tractor service port. Ensure the service does not interfere with the normal hydraulic supply to the machine. Speed of the mechanism can be set using the restrictor valve (item 1, fig 17) behind the rear RH guard door.

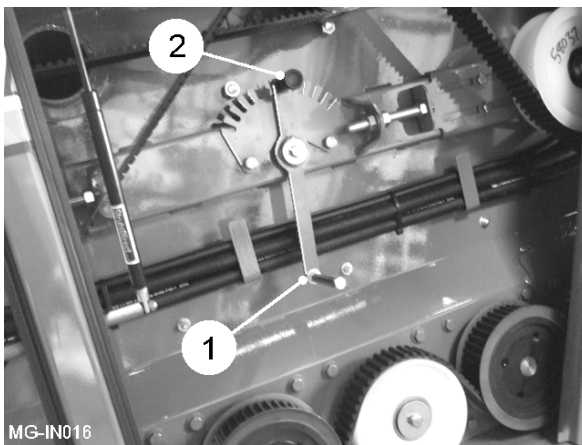


Fig 10

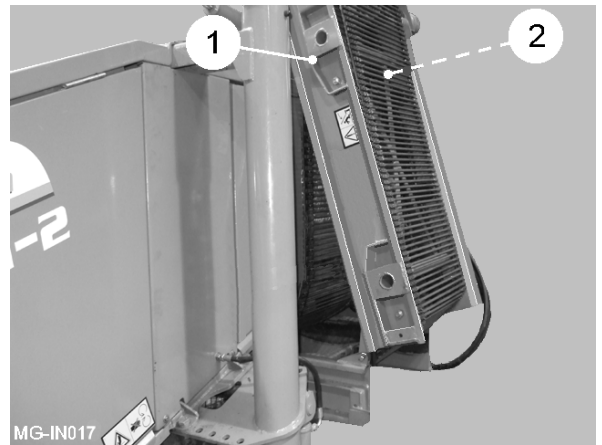


Fig 11

Cross Conveyor

Drive to the cross web is by means of two hydraulic motors, one at each end. In order to place the conveyed material into the centre of the designated trench, the speed of the cross web must be coordinated with the amount of traverse.

The LH side of the cross conveyor (item 1, fig 11) is folded vertically to reduce the width for transport.



Never operate the side shift function with the conveyor folded. Ensure the conveyor is moved fully to the LH discharge position before folding the conveyor.

To unfold the cross conveyor:

1. Remove the transport lock pin (item 2, fig 11).
2. Set the switch marked 'lift to operate' to conveyor fold function.
3. Lower the conveyor using the adjacent toggle switch.

4. Finally, reset the switch marked 'lift to operate' to conveyor side shift function.

To fold the cross conveyor:

1. Move the conveyor fully to the LH side of the machine using conveyor side shift function.
2. Reset the switch marked 'lift to operate' to conveyor fold function.
3. Fully raise the conveyor using the adjacent toggle switch.
4. Refit the transport lock pin (item 2, fig 11) and secure with the R' clip.

Rhizome Discharge Elevator (optional)

The optional discharge elevator is fitted in place of the cross conveyor. The elevator is designed to discharge the lifted material into a trailer running along side. Drive to the elevator web is by means of two hydraulic motors, one at each end of the web. The elevator is unfolded for work using the control box 'elevator fold' switch.



Before operating the discharge elevator, ensure everyone in the vicinity is aware of your intentions and that there are no overhead restrictions. See the HSE information sheet within this handbook.

Axle Steering

The axle steering is used to keep the machine correctly in the rows especially on sidling slopes. The steering indicator (item 1, fig 12) shows the current position of the wheels. The proximity sensors (item 2, fig 12) are part of the auto-centring circuit.

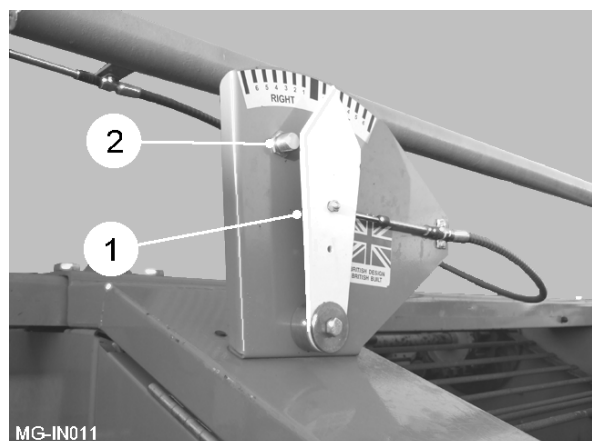


Fig 12

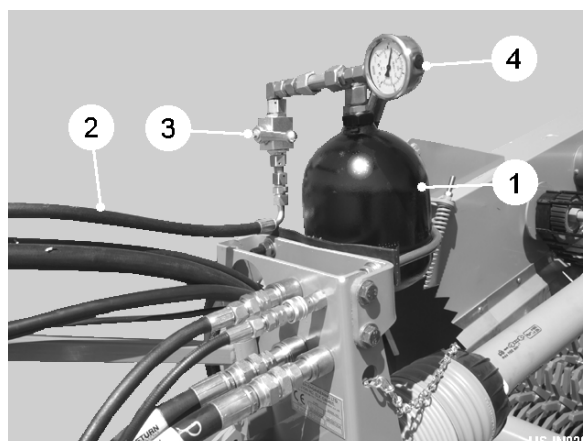


Fig 13

Hydraulically Damped Drawbar (optional)

The hydraulically damped drawbar is fitted to protect the machine when operating in soil conditions where buried obstructions may be encountered. The system consists of a hydraulic ram mounted within the drawbar pressurised by an accumulator (item 1, fig 13).

The design allows the drawbar to extend by 200mm. After 25mm of movement a proximity sensor triggers the control system which simultaneously lifts the digger on full flow, and stops the boulder box stars, vari-flow and cross conveyor webs. After activation the machine elements have to be restarted using the control box. The drawbar must always be pressurised before commencing work.

To set the accumulator pressure, connect the hose (item 2, fig 13) to the tractor spool valve and open the accumulator valve (item 3, fig 13). Open the tractor spool valve while closely watching the pressure gauge (item 4, fig 13). When the pressure reaches 65 bar immediately close the spool valve and then close the accumulator valve. If necessary, reduce the pressure slightly using the accumulator valve. The drawbar is now pressurised and ready for operation. If in work, due to differing soil conditions, the initial setting of 65 bar is found to be too low and the drawbar is extending in normal work, increase the pressure setting by increments of 10 bar until the drawbar is static. **DO NOT EXCEED 120 BAR.** If the drawbar is still not functioning correctly when the maximum pressure is reached, consult your Standen dealer for further advice.



Do not carry out maintenance on the drawbar with circuit pressurised. Stop the tractor engine and reconnect the hose to the tractor spool valve. Open the accumulator throttle valve and operate the spool valve to dump the hydraulic pressure within the system.

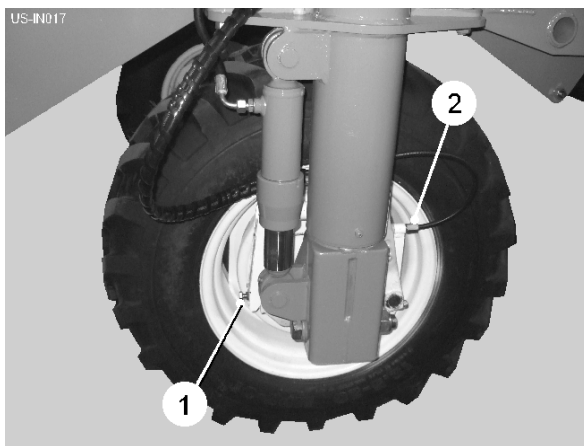


Fig 14

HANDBRAKE MECHANISM

Fig 15

Braked Axles (optional)

Connect the hydraulic brake hose to the tractor 'brake service outlet'. The machine brakes will operate when the tractor brakes are applied. Brake shoe wear can be taken up by adjusting the setscrews (item 1, fig 14).

To apply the handbrake, pull the lever (item 1, fig 15) in and out against the ratchet until the brake cables are fully tensioned. To remove the handbrake, pull the lever fully out to release the ratchet mechanism catch (item, 2, fig 15). Finally, push the lever back under the machine for transport. Handbrake cable length is set on the cable adjusters (item 2, fig 14).

Starting Off Your Machine

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

1. Is the machine connected correctly to the tractor ?
2. Is the front end of the machine set correctly for the bed width being lifted ?
3. Are the wheel settings correct on both machine and tractor ?
4. Is the transport lock valve on the depth ram in the open working position ?
5. Has the depth roller transport strap been removed ?

When satisfied that the tractor and machine are set up correctly, then commence work. Work the machine for approximately 30m and stop. Do not run the machine out. Leave the soil on all sections of the machine. By a series of visual checks you can assess how the machine settings are performing. Check for correct depth by digging into the formed bed.

Getting the Best Results From Your Machine

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

1. Ensure the tractor tyres are not too wide or they may crush the side of the ridges.
2. Ensure the tractor drawbar pin is not too long or it may drag and bunch up soil and weed.
3. Ensure correct forward speed of tractor to match the conditions and machine capabilities.
4. Ensure the shares are clean and shiny and that the share bolts do not protrude above the share blades. This will reduce drag and help with the flow in front of the machine.
5. Keep the share frame area clean in wet and heavy conditions. This will help prolong the life of the front roller and first row of stars and will reduce the load on the drive system.
6. Ensure the discs are set to the correct depth. Too much depth will cause soil to slab and encourage soil to stick to the discs and prevent them turning.
7. Ensure the correct width of depth roller is fitted to your machine for the width of your beds.
8. Do not apply too much pressure on the depth roller as clods may be produced. Only enough pressure to keep the roller turning is necessary in most conditions.

9. The clod mat blocks are designed to restrict the soil flow allowing the stars more time to break up clods. Ensure the blocks are not over adjusted as flow may be restricted too much.
10. Use the levelling legs to keep the machine level with the horizon. This will maintain an even spread of soil across the full width of the machine so that the stars work to their maximum efficiency.
11. To ensure the clods and stones fall into the centre of the trench, always keep the cross conveyor speed as slow as possible.

Star Spacing

Separation is a function of star spacing and star speed. Normal star spacing for the Megastar Gen-2 is one spacer for de-stoning and three spacers for de-clodding. Each machine can be converted to the other by changing the star spacing or by fitting alternative, ready built-up shaft assemblies. The definition of clod or stone separators is not rigid and it may well be that either settings may work satisfactorily in different conditions, by using variations in forward and rotational speeds.

Only general advice can be given with regard to star spacing as any settings must be governed by soil and weather conditions. Your authorised STANDEN ENGINEERING LTD. dealer will be pleased to discuss and give recommendations and assistance on the best set up to suit your requirements. Section 3 of this handbook contains diagrams showing the layout of different star spacing configurations. Special note needs to be taken when fitting the stars so that the 'spiral' effect, caused by the alternate long fingers, follows around the complete star shaft correctly

Star Speed

The following charts are a guide to engine revs, PTO speed and star shaft speeds and show the relationship to web pitch. With stars it is important to ensure the required star shaft speed is maintained. The charts show how easy it is for the operator to ensure his shaft speeds are correct by relating the tractor revs and PTO settings to the resultant stone or soil particle size (and approximate web size). The charts also show how easy it is for the operator to adapt to changing soil conditions within the field or from field to field to achieve a finer or coarser bed as needed.

It is advantageous to achieve the maximum rate of work consistent with an adequate quality. Forward speed and machine turning speed are independent, and both are affected by the working conditions prevailing.

It is important to keep the machine full when separating. After choosing the best engine revs from the chart to achieve the desired star shaft speed, select a gear to give a forward speed which will keep the machine full. In practice engine revs can be left at one setting and output maximised by varying the forward speed by gear selection. When starting a new pass of the field it is necessary to achieve the normal working speed as soon as possible in order to get the machine full again. As soil conditions vary the speed of operation may have to be adjusted up or down. As you gain experience you will establish the best operating speed for your machine.

1.21

OPERATION IN THE FIELD

De-stoning (1 spacer)

Engine r.p.m.	PTO r.p.m. @ 540 setting	Star shaft r.p.m.	Approx web size (mm) soil texture	Typical soil type
1800	490	227	28	Light
1700	460	214		
1600	440	202	35	
1500	410	188	40	Medium
1400	380	177	45	
1300	350	164		Heavy
1200	325	151	50	

De-clodding (3 spacer)

Engine r.p.m.	PTO r.p.m. @ 540 setting	Star shaft r.p.m.	Approx web size (mm) soil texture	Typical soil type
1800	490	227		Light
1700	460	214	45	
1600	440	202		
1500	410	188		Medium
1400	380	177	50	
1300	350	164		
1200	325	151		Heavy
1100	300	139	55	
1000	270	126		

The above figures are approximate depending on soil type, texture and moisture content.

New Machines

It is important during the first weeks to keep a regular check on the tightness of nuts, bolts and screws etc. which may have worked loose.

Lubrication

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

Shafts, bearings and pivot points fitted with grease nipples should be greased with good quality medium grease. Do not allow these points to run dry as this will accelerate wear.

When greasing bearings some are sealed and pre-lubricated. You should take care not to over grease this type as the seals may be damaged. If the seals become damaged it may be possible for dirt to enter the bearing causing accelerated wear.

The gearbox, mounted on the bridge in the centre of the machine, should be regularly examined for any signs of leaks and checked for oil level, and if necessary topped up.

To ensure the efficient operation of the PTO shafts, it is vital to grease the sliding section on a daily basis. Failure to do this will result in early failure of the shafts. The PTO shaft should be disconnected from the tractor and the two halves pulled completely apart. Each half should be examined for any indication of tightness or binding when they are in operation and corrected as necessary. The inside of the outer tube and the outside of the inner tube should be liberally coated with grease and the two halves pushed back together. Wipe off any excess grease around the guards. Slide the two halves in and out several times to ensure that they slide easily and that the grease has spread around the shaft tubes.

Use only the BP lubricants recommended by Standen or an exact equivalent recommended by your lubricant supplier.

Medium grease	=	BP Energrease L S E P 2
Gearbox Oil	=	BP EP HYPO ENERGEAR 85W/140 (capacity 2.75 litres)

Drive Belt Maintenance

As a guide, correct belt tension is achieved when, at a distance half way between the furthest spaced pulleys, the belt can be twisted approximately 45°. The LH and RH input belts should be adjusted first (see page 1.29). Ensure alignment by measuring the distance between the pulley centres. Both sides must be equal. The tension rollers (item 1, fig 16) are each fitted with a compression spring. When tensioned correctly, the LH drive springs should be compressed to the lengths shown on page 1.30 and the RH drive springs to the lengths shown on page 1.31. To adjust the tension, loosen the four mounting bolts (item 2, fig 16) and turn the adjuster screw locknuts (item 3, fig 16).

To set the boulder box 'V'belt tension, loosen the mounting bolts (item 2, fig 17) and adjust the tension rollers (item 3, fig 17) using the adjusters (item 4, fig 17). Set the belts tight enough to give a positive drive without undue stretching.

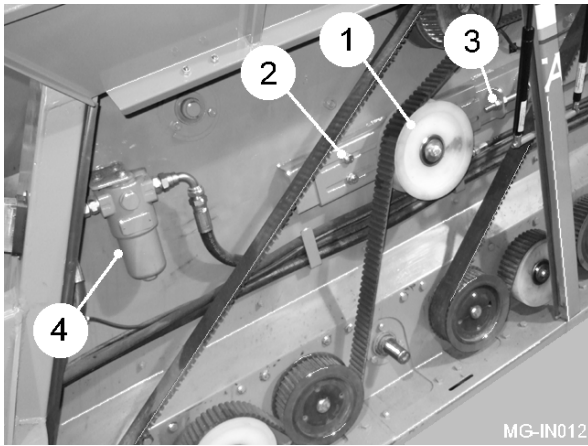


Fig 16

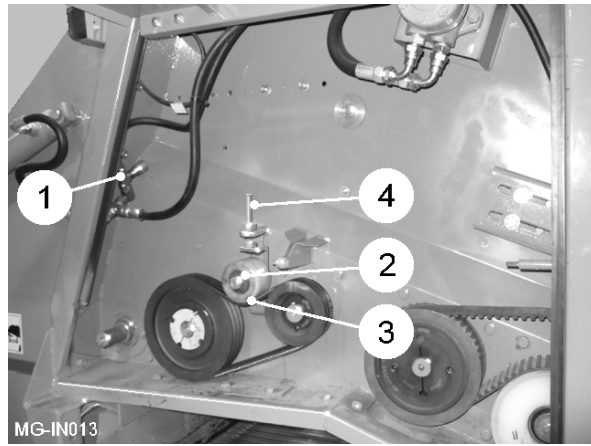


Fig 17

Electrical System Maintenance

The components within the electrical system are designed to be maintenance free. If it becomes necessary to carry out any repair, only a competent engineer capable of this type of work should carry out the repair. Periodically ensure that all multi pin plugs are correctly fitted into their sockets and are not becoming loose.

Hydraulic System Maintenance

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



WARNING: Do not carry out any maintenance or release any hoses without first carrying out the residual hydraulic pressure dump procedure outlined later in this section.

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

As the tractor supplies the oil for the machine's hydraulics, ensure that the tractor hydraulic system is serviced in accordance with the manufacturer's recommendations to prevent any contamination of the machine's system. To extend the life of the hydraulic components it is important to monitor the condition of the hydraulic oil. Always maintain adequate oil level in the tractor's reservoir.

A pressure filter (item 4, fig 16) is mounted in the supply line from the tractor. The element should be replaced after the first 50 hours of running time and then annually or every 500 hours thereafter.

Residual Hydraulic Pressure Dump Procedure

The following procedure outlines the method of relieving the residual pressure within the hydraulic system. It is essential that this procedure is carried out before any maintenance or repairs are attempted on the hydraulic system.

1. Place chocks to the front and rear of both wheels to prevent the machine from moving.
2. Operate the depth ram to fully lower the front of the machine.
3. Disconnect the machine from the tractor leaving the hydraulic and electrical connection still attached.
4. Move the tractor forward so that the machine drawbar is just clear of the tractor hook.
5. Operate the machine levelling rams until the machine is in its lowest position.
6. Switch off the tractor engine.
7. Operate all switches on the driver's control box, in turn, to remove any remaining pressure within the hydraulic system.
8. Disconnect the hydraulic and electrical connections from the tractor.

Testing the Auto-Depth Control Circuit

Uneven share depth operation. When share is in the fully raised position and the auto-depth function is selected the drawbar depth ram does not operate, though it does operate in manual mode. Check the setting of the proximity sensors (see proximity sensor adjustment). Check the operation of the proximity sensors (see proximity sensor operation).

Tests should be carried out with the PTO shaft disconnected, control box switched on and tractor engine running at normal working speed.



Always disengage the PTO shaft before carrying out any tests.

If the auto-depth control still does not function correctly then check the multi pin plug and socket at the front of the machine to make sure no contacts are bent. If after checking the setting and operation of the sensors, the share operation is still incorrect, remove the cover from the junction box (item 1, fig 18) mounted behind the LH rear guard door. Too much oil flow from the tractor can affect the movement of the depth ram resulting in uneven depth. The 'raise' timer (item 2, fig 18) and 'lower' timer (item 3, fig 18) are adjustable and have a range of 0.1 seconds to 3 seconds on a scale 0 to 10. Ensure the timers are set to the same value. Reducing the timer delay makes the share depth control more sensitive to ground level variations, whilst increasing the value reduces the sensitivity.

Testing the Axle Auto-centring Circuit

If the axle auto-centring circuit is not functioning check that the proximity sensors are set correctly (see proximity sensor adjustment). Also check the operation of the proximity sensors (see proximity sensor operation). If after checking the above points the auto-centring circuit is still not working, remove the cover from the junction box (item 1, fig 18) mounted behind the LH rear guard door. The relay (item 4, fig 18) is for steering right and the relay (item 5, fig 18) is for steering left. Check the output of the relays by repeating the proximity sensor operation test while at the same time observing the relays. By triggering the proximity sensors the relays should be heard latching in place. If a relay is not latching then it will need to be replaced.

Tests should be carried out with the PTO shaft disconnected, control box switched on and tractor engine running at normal working speed.



Always disengage the PTO shaft before carrying out any tests.

Proximity Sensor Adjustment

Proximity sensors are used in the auto-depth control circuit and the axle self-centring circuit. The sensors are factory set and in normal circumstances should not require any adjustment. Should it be necessary to readjust, then the following settings should be obtained (see figure 19).

Depth control sensors (item 3, fig 8): A = 30mm B = 74mm C = 3mm

Axle self-centring sensors (item 2, fig 12): A = n/a B = 100mm C = 3mm

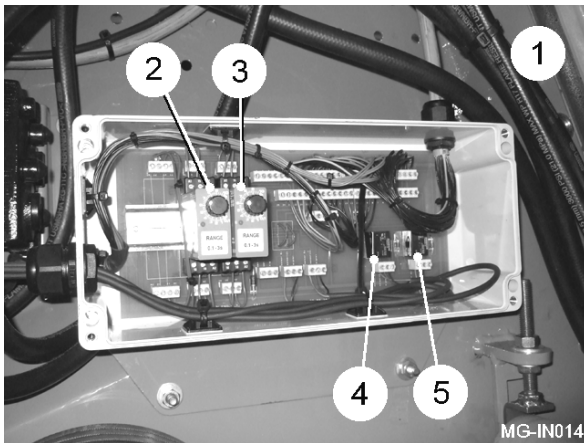


Fig 18

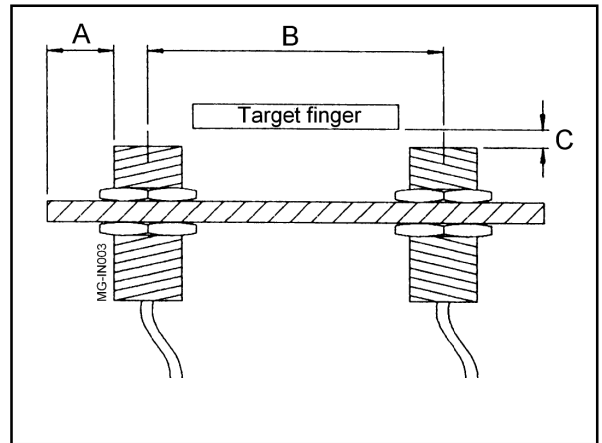


Fig 19

Proximity Sensor Operation

Depending on the circuit being checked, activate either the share auto-depth or axle auto-centring circuit. Trigger each sensor in turn by placing a metal object (such as a screwdriver) in front of the sensor. As the sensor is triggered a light should illuminate on the sensor body. If the light does not illuminate the sensor should be replaced.

Daily Maintenance

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

Carry out the following checklist: -

1. Check tension of all drive belts and adjust if necessary.
2. Check tyre pressures and adjust if necessary.
3. Check for any damaged or broken rollers, web bars or stars etc. Repair or replace as necessary.
4. Check wheel nuts for tightness.
5. Check all scraper clearances and adjust as necessary. Scrapers should be adjusted as close as possible without actually touching.
6. Check all hydraulic cylinders, valves and pipe work for signs of leaks or damage, repair or replace as necessary.
7. Carry out lubrication
8. Grease axle king pins

Weekly Maintenance

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

1. Carry out all the procedures listed in daily maintenance.
2. Check all shafts, bearings and rollers for undue wear, and replace as necessary.
3. Check all bearings for lubrication, grease as necessary.
4. Check discs and shares blades for excessive wear, replace if necessary.
5. Check hydraulic and gearbox oil levels.

Annual Maintenance

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

1. Carry out all the procedures listed in daily and weekly maintenance.

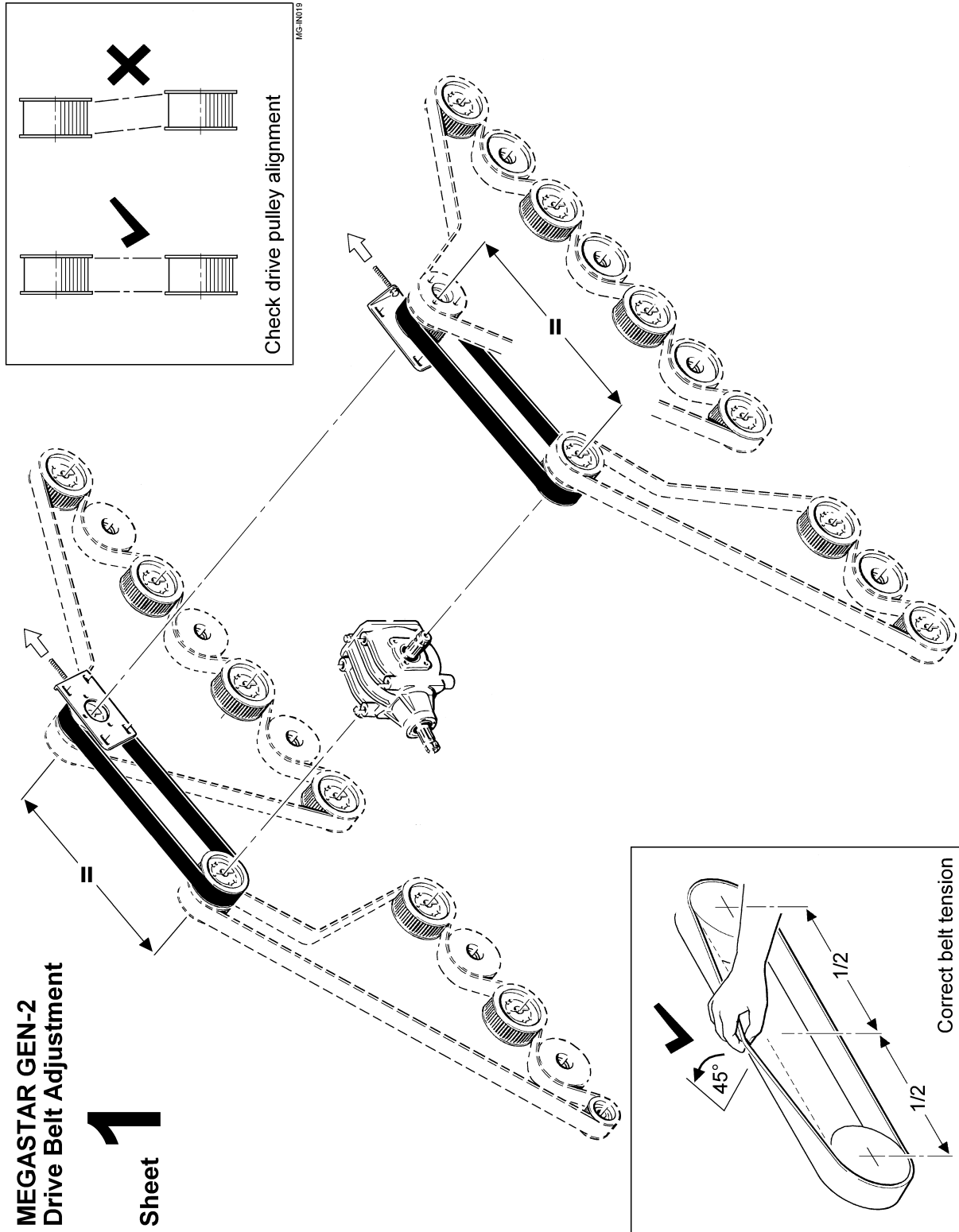
2. Check cross conveyor web for any damage or wear and repair or replace as necessary.
3. Check stars and replace any badly worn or damage parts.
4. Check metalwork (e.g. side plates) for any damage or wear and repair or replace as necessary.
5. Inspect wheel bearings and check for excessive wear, replace as necessary. Re-pack with fresh grease on re-assembly.
6. Replace pressure filter element. Use only genuine Standen replacement parts.
THIS IS NOT A WASHABLE ELEMENT.
7. If a high water content becomes apparent or a cloudiness in the hydraulic oil, the oil should be changed.

Out of Season Storage

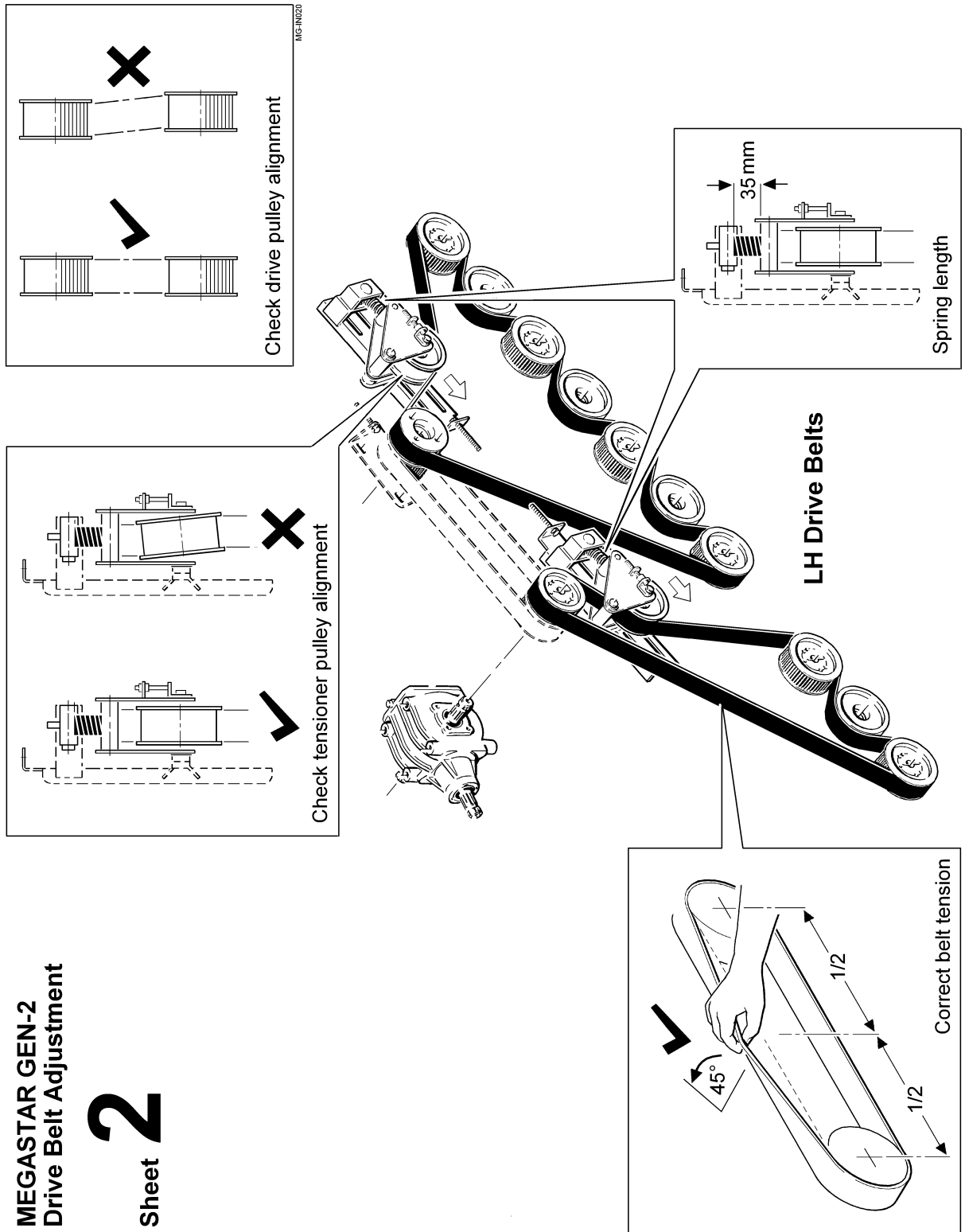
The machine can frequently operate in soils which contain chemical fertilisers etc. When the working season is completed wash and clean the machine thoroughly prior to carrying out the following checks and operations.

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

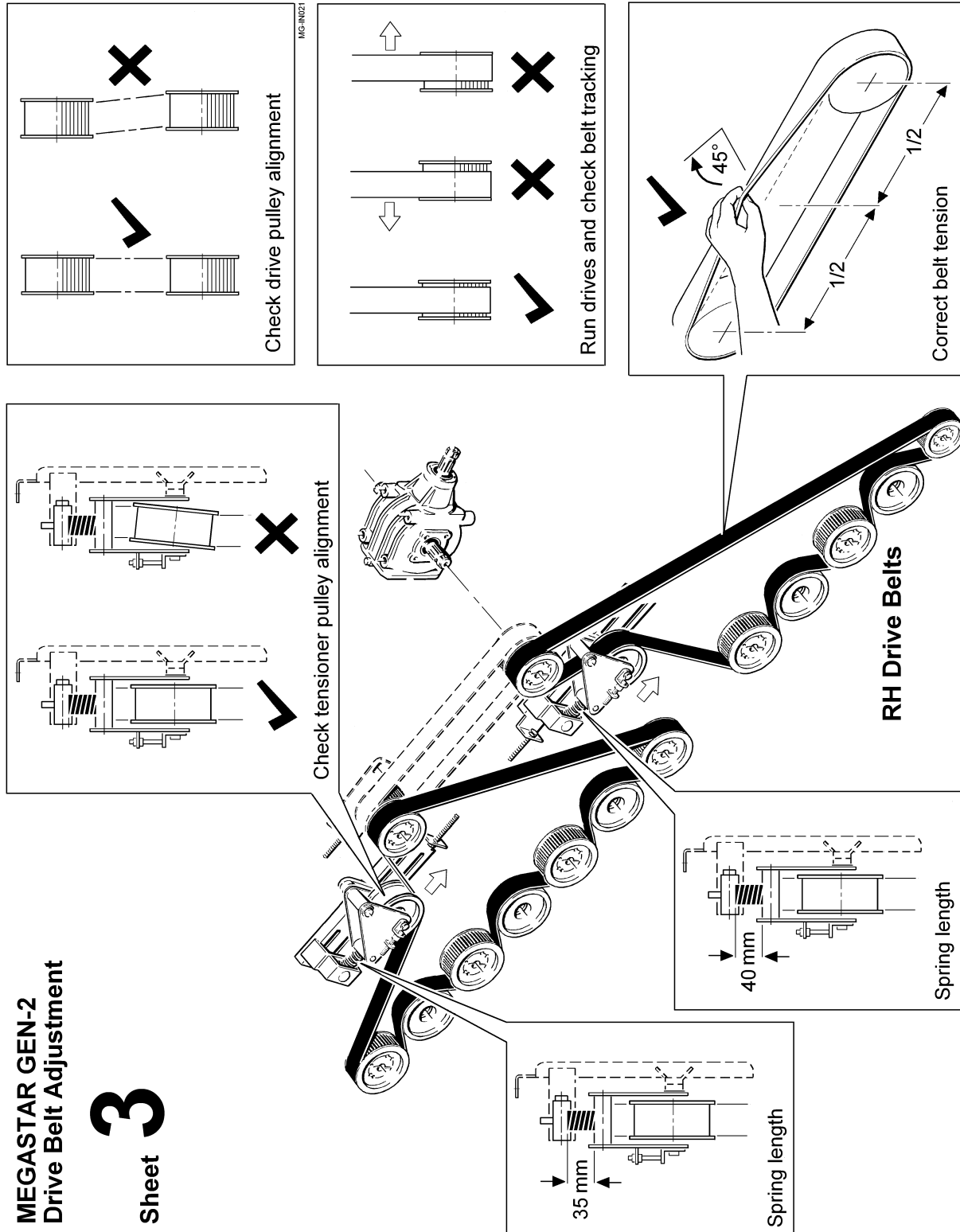
Input Drive Belt Adjustment



LH Drive Belt Adjustment



RH Drive Belt Adjustment



Machine Dimensions

Length	6.45 m (including drawbar)
Length with boulder box	6.79 m (including drawbar)
Working width	4.00 m (maximum)
Transport width	2.70 m
Transport Height	2.30 m

Machine Weight

Basic machine	3450 kg (with cross elevator) 4040 kg (with boulder box) 3770 kg (with discharge elevator)
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Technical Data

Bed widths	1.5 to 2.0 m
Tractor power requirement	90 bhp minimum
Oil flow requirement from tractor (Set to constant pump)	minimum 70 ltr/min maximum 100 ltr/min
(For flows greater than 100 ltr/min consult your Standen dealer)	
Electrical requirements from tractor	12V DC negative earth
Drive requirement from tractor PTO	1 3/8" 6 spline @ 540 rpm maximum
Tyre size (pressure)	11.5/80-15.3 12PR-3.5 (51 p.s.i.) 12.0/75-18 12PR-4.0 (58 p.s.i.)
Wheel nut torque (M18 x 1.5)	270 NM
Nut/bolt torque	

Description	Torque	Description	Torque
M6 nyloc zinc nut	14 nm	M6 bolt/steel nut	10 nm
M8 nyloc zinc nut	31 nm	M8 bolt/steel nut	26 nm
M10 nyloc zinc nut	60 nm	M10 bolt/steel nut	52 nm
M12 nyloc zinc nut	118 nm	M12 bolt/steel nut	95 nm
M16 nyloc zinc nut	282 nm	M16 bolt/steel nut	230 nm
M20 nyloc zinc nut	515 nm	M20 bolt/steel nut	440 nm
M24 nyloc zinc nut	936 nm	M24 bolt/steel nut	766 nm

DIAGRAMS

Electrical Circuit	2.1
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