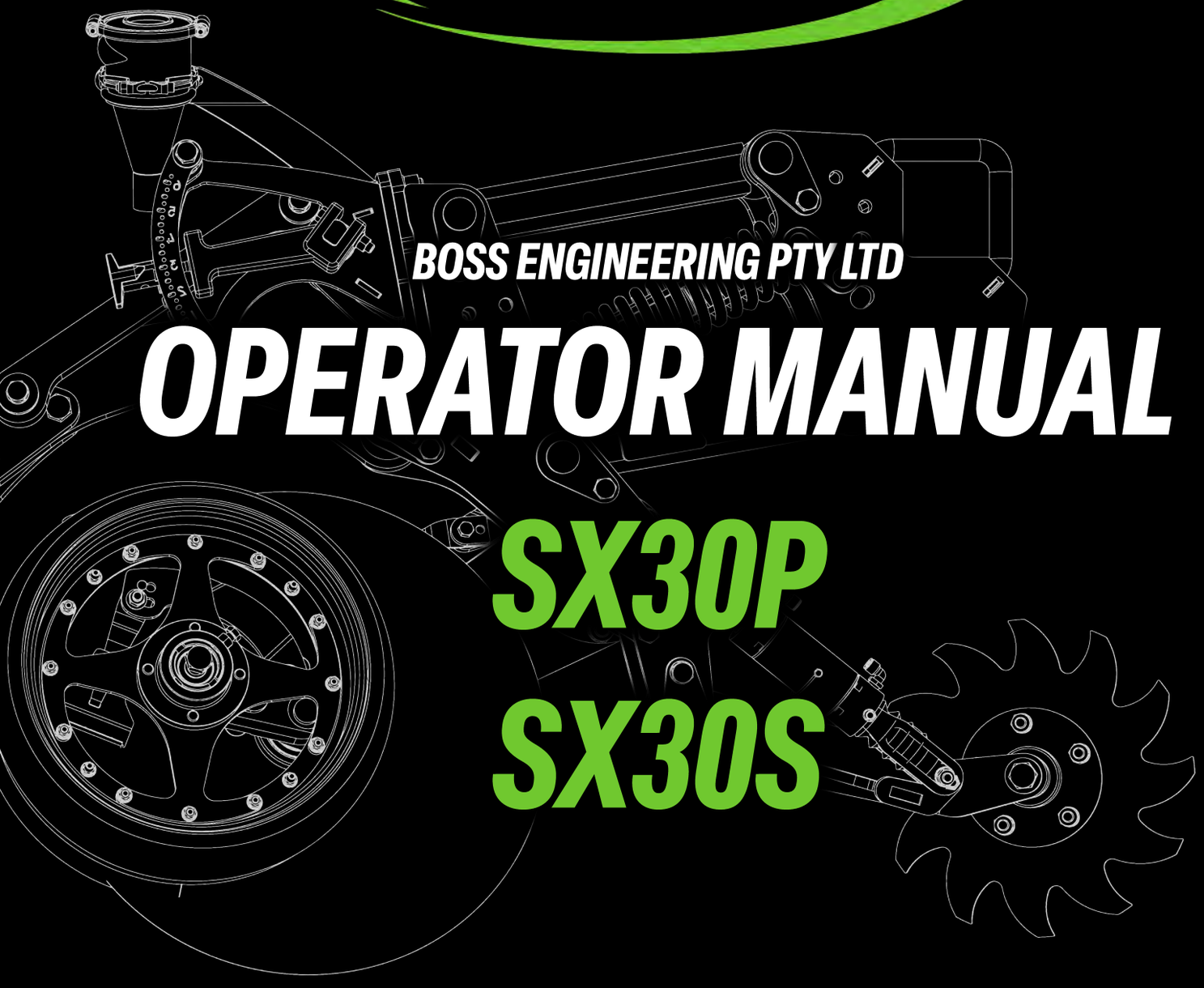
BOSS®



BOSS ENGINEERING PTY LTD

OPERATOR MANUAL

SX30P
SX30S

Spare Parts Contact Number: **1300 564 144**

After Hours Contacts

Rhys Anderson: **0438 430 089**

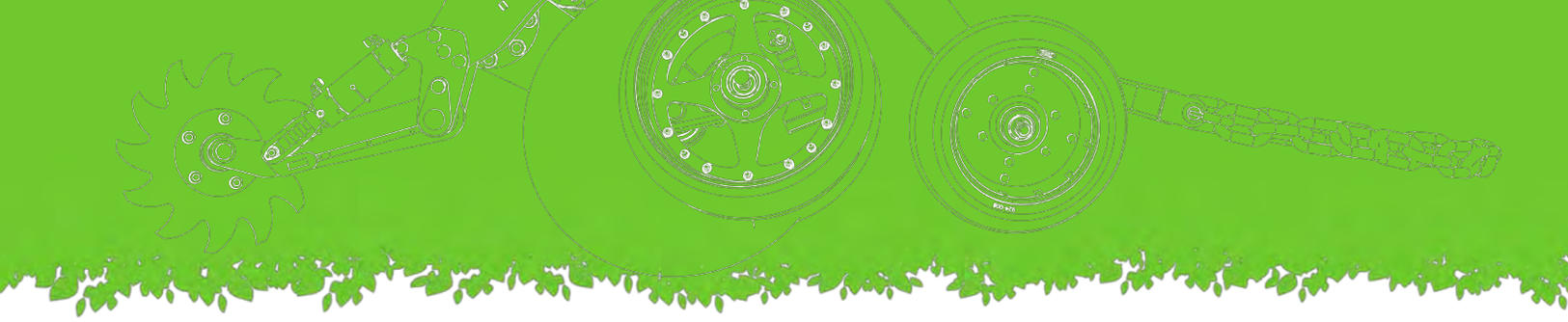
Dan O'Brien: **0488 024 197**

Dan Ryan: **0488 512 677**

Josh Palmer: **0418 208 251**

spares@bosseng.com.au

TABLE OF CONTENTS



PLANTER SAFETY

- Ensure safety stands are in place before working under machine.
- Ensure the tractor is shut down and the key removed before working on machine.
- Be aware of pinch points on the row unit and planter frame.
- Inspect for hydraulic leaks and replace hoses if required.
- Pressurised hydraulic oil can harm or kill.
- Never ride on machine when operating.
- Do not let children climb or play on machine.
- Ensure safety pins are in place when the machine is in the folded position.
- Ensure the tractor is ballasted correctly for linkage machines.
- Be aware of overhead power-lines when transporting a folded machine.
- Width and height restrictions may apply when traveling on public roads, consult your local transport regulator for specific requirements in your area.
- Ensure tyres are inflated to the correct pressure as recommended.
- **Maximum transport speed is 20km/h.**
- Inspect the machine regularly for loose bolts, damaged or worn components and replace as required.
- Inspect and keep wheel studs tight.
- Do not stand between the tractor and implement while coupling the machine up.
- Ensure all safety signs are in place and replace if damaged.
- Ensure all safety guards are in place.

DO NOT TURN WITH SX30P ROW UNITS IN THE GROUND.
MAKE HEADLAND TURNS WITH ROW UNITS RAISED.
FAILURE TO DO SO MAY RESULT IN DAMAGE TO THE OPENER.

NEVER DISASSEMBLE THE DOWN PRESSURE SPRING AS THE SPRING COULD BE RELEASED CAUSING SEVERE INJURY OR DEATH

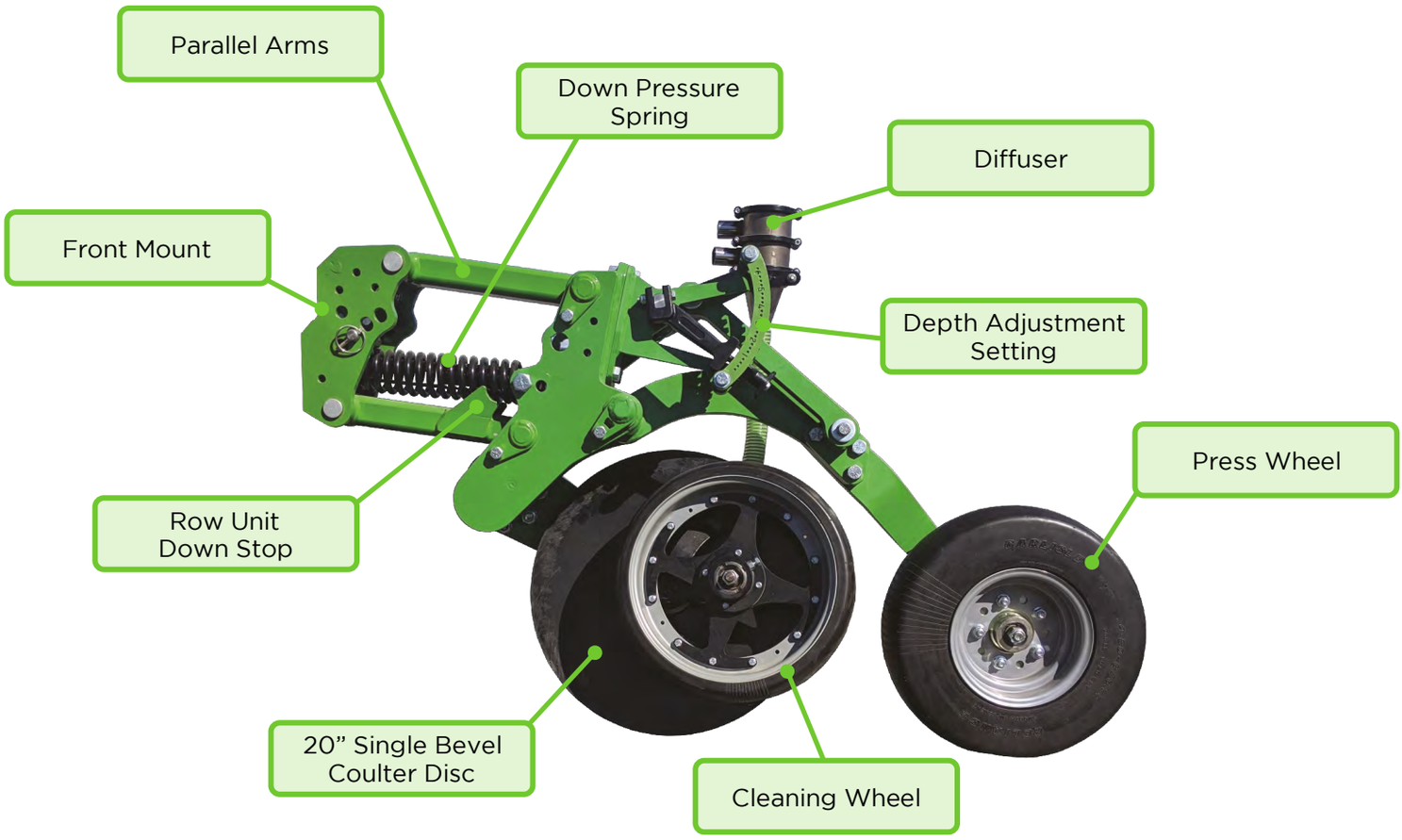
SHUT OFF THE TRACTOR ENGINE, REMOVE THE KEY FROM THE IGNITION AND BE CERTAIN THAT ALL MOVING PARTS HAVE STOPPED BEFORE SERVICING.

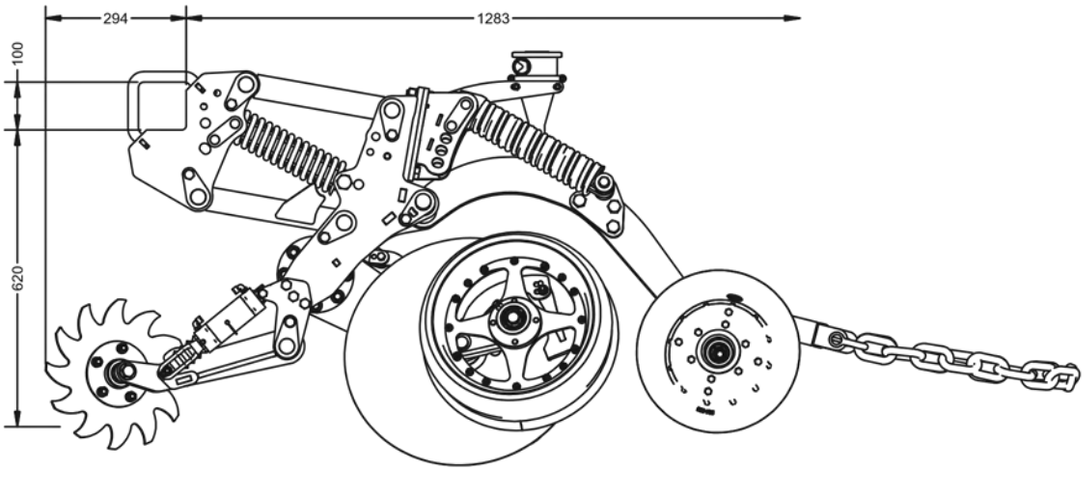
BEFORE SERVICING, MAKE SURE ALL SAFETY STANDS AND SAFETY PINS ARE IN PLACE.

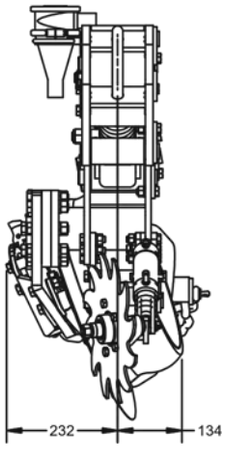
NEVER PLACE HANDS OR FEET UNDER THE DISCS OR BETWEEN THE COILS OF A COMPRESSION SPRING AS THE IMPLEMENT COULD LOWER UNEXPECTEDLY.

SX30P Single Disc Row Unit

(Left hand unit shown)







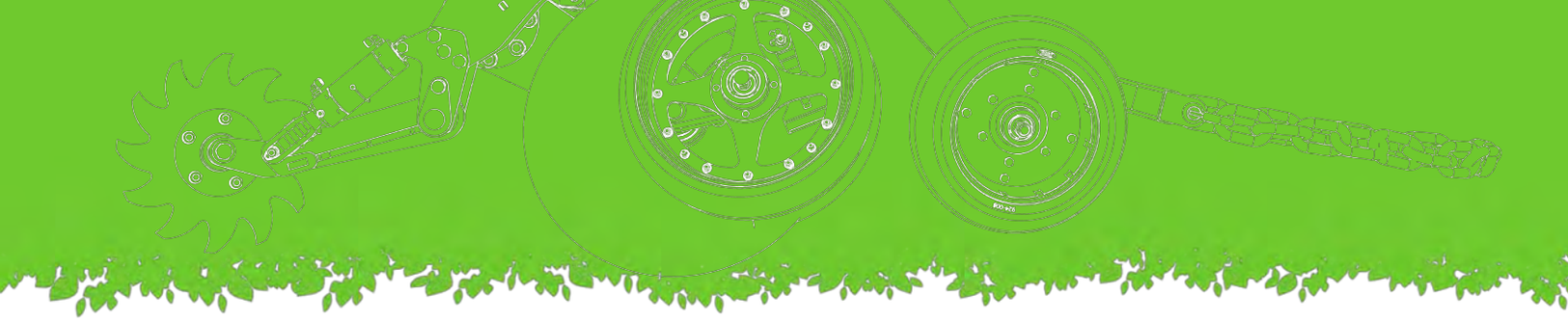
2 Under-Bar Operating Height and Frame Level

The under-bar operating height of the SX30P and SX30S must be set correctly to maximise the row unit's ability to follow ground contours, and maintain a consistent planting depth and press wheel pressure.

When set in the working position the parallelogram arms will be running slightly downwards. This setting allows the row unit to have the maximum travel available for following ground contours.

The parallel arms should be running 2" down from the front pin to the rear pin. This position gives the row unit 7" of up travel and 5" of down travel.

Under-bar height will vary—see table 2.1. Range is between 686mm to 584mm.



TIPS FOR UNDER-BAR OPERATING HEIGHT

*620mm for SX30P to achieve optimum Parallelogram travel.

Table Below for SX30S Non-Parallelogram Only

- The under-bar working height may have to be adjusted when changing planting depth to maintain accuracy. The table below is a guide only, as the planting rows should be checked in fielding operating conditions.

Seed Depth (inches deep)	0	1/2	1	1 1/2	2	2 1/2	3	3 1/2	4
Under-Bar Frame Height (mm from ground)	686	673	660	648	635	622	610	597	584

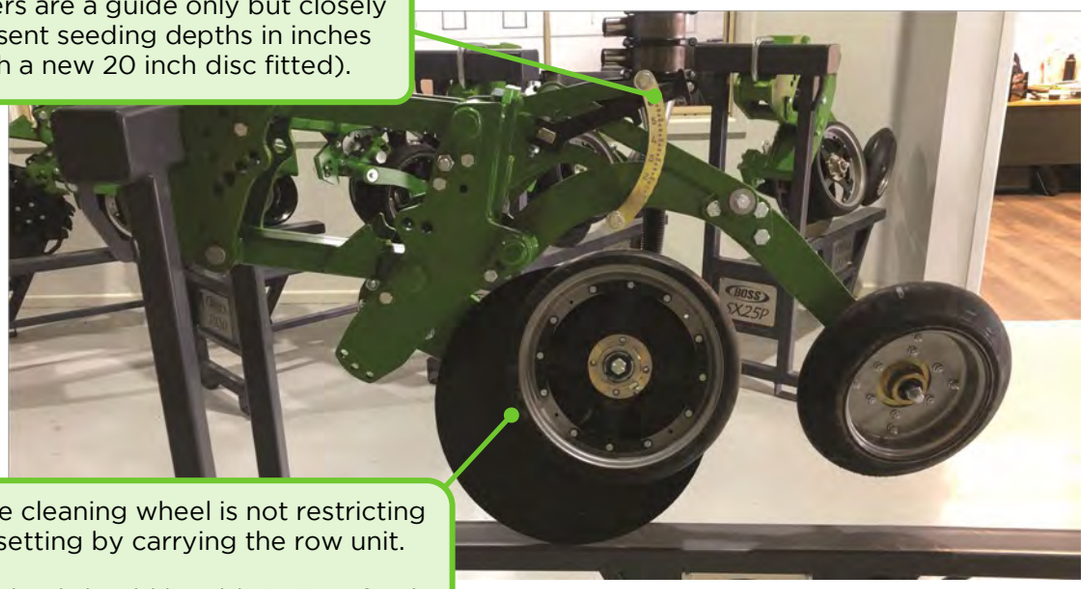
Table 2.1

- If the under-bar working height is set too high, the row unit may not have the full amount of parallelogram travel available for the given ground conditions.
- If the under-bar working height is set too low, the row unit may not have the full amount of parallelogram travel available for the given ground conditions.
- If using a three point linkage planter frame the toolbar angle must also be set accurately front to back and side to side to help maintain a constant press wheel pressure, and keep even planting depth.
- Ensure the main toolbar angle is set parallel to the ground.

3 SETTING PLANTING DEPTH

Planting depth on the SX30P row unit is adjusted on the press wheel. Planting depth adjustment is made by pulling the spring-loaded t-handle outwards and moving the handle to a different slot, ensuring the lugs on the adjuster side of the hand grip locate firmly in the notches provided. Twisting the handle head while outwards allows finer increments to be used by "walking" the adjuster head up or down the adjustment notches.

Press wheel weight may need to be supported with one hand while adjusting depth with the other. The numbers indicated on the depth setting are a guide only, but closely represent planting depth in inches deep.



TIPS for planting depth adjustment

- Moving the press wheel up increases seeding depth.
- When the seeding depth is changed the press wheel pressure changes and may have to be adjusted to suit.
- Ensure the cleaning wheel is not restricting your depth setting by being adjusted to low (see section 4). As a guide set cleaning wheel height to be 1 inch more than depth setting.
- It is the responsibility of the operator to make in field checks to confirm seed depth settings are as required.

4 SETTING CLEANING WHEEL

The cleaning wheel on the SX30P is designed to stop the soil from lifting with the trailing edge of the disc. You can also vary the amount of soil left in the trench.

4.1 CLEANING WHEEL

The cleaning wheel is generally set 10-20mm above ground level when in the working position. The easiest way to check is to stop the tractor, and while the row units are still in the ground you should be able to rotate the cleaning wheel around so that your hand, when rested on the tyre, will fit between the ground level and tyre. This is a guide only as you may choose to vary the amount of soil throw you require to suit different planting conditions.

As a guide the cleaning wheel should be set 10mm - 20mm off the ground in the working position.

This may be hard to judge as loose soil the disc has lifted will be underneath the cleaning wheel. A good way to check is to put your hand on the tyre and rotate around; the loose soil should just push out from underneath the tyre.

TIPS for Cleaning Wheel Adjustment

- The higher you lift the cleaning wheel the more soil is thrown out of the trench, and the more soil disturbance is created.
- If the cleaning wheel is set too high in wet heavy clay soils, the side wall of the seeding trench may be torn out.
- To decrease the amount of dry soil required back over the planting row, lift the cleaning wheel to allow more soil throw.
- If the cleaning wheel is set too low the planters seed depth setting will be inaccurate.
- If the cleaning wheel is set too low the press wheel may not be able to close the seeding trench.
- When you adjust planting depth the fixed cleaning wheel may need to be adjusted at the same time.
- Operate the planter at normal planting speed (8-11km/hr) to assess if your settings are correct.
- Cleaning wheel height can be adjusted by pulling the spring-loaded t-handle upwards and moving forwards or backwards to suit desired height. Note these numbers do not correspond with planting depth when gauging depth from press wheel.

4.2 Setting the Cleaning Wheel against the Disc

The cleaning wheel should be adjusted prior to putting the planter in the ground, and should be set to lightly touch the disc. The cleaning wheel should be able to be turned over by hand.

To adjust the cleaning wheel closer to the disc a 15/16th spanner is required. Simply remove the retaining bolt and slide the cleaning wheel off. Be careful the spacer shims are not lost when removing the wheel. Remove the required amount of shims (at this point shims may be added if cleaning wheel needs more clearance). Slide the cleaning wheel back on the bolt and put the shims you removed back on the outside of the cleaning wheel before replacing the retaining nut.

Check the cleaning wheel moves freely against the disc.

TIPS for Cleaning Wheel Adjustment

- If too much pre-tension is applied against the disc, the disc may stall and bulldoze.
- If the cleaning wheel is adjusted too tightly against the disc the stainless steel ring or tyre may wear excessively. SX30P runs the cleaning wheel on an angle to clean at the bottom of the wheel and be away from the disc 10-12 mm at the top for less friction.
- If the cleaning wheel appears not to be running consistently against the disc ensure that the tyre has been evenly pressed into the rim.
- In fluffy or soft soil types the cleaning wheel may have to be adjusted further away from the disc to minimise resistance.

Ensure the cleaning wheel is not too tight on the disc as this may cause excessive wear and blockages.

Remove cleaning wheel and add or remove shims as required.
The tapered washer must locate against the cleaning wheel bearing as shown.

4.3 CLEANING WHEEL STAINLESS STEEL RINGS

The cleaning wheels are fitted with stainless steel rings which help to improve performance when seeding into sticky conditions in most soil types; however be aware in some soil types spacing the cleaning wheel away from the disc several millimetres may improve performance.

To improve the life of the stainless steel scraper ring do not continually adjust onto the disc, allow the ring to work until mud build up starts to cause problems.

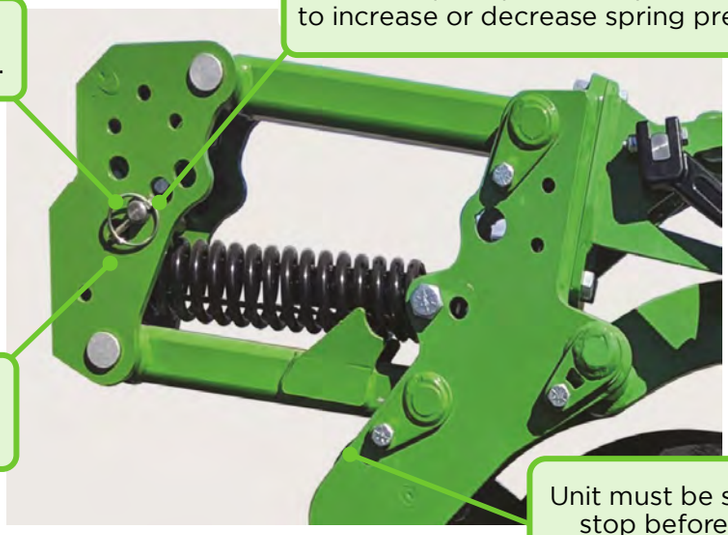
5 PRESS WHEEL / ROW UNIT DOWN-PRESSURE

The press wheel pressure on the SX30P is governed by the down pressure spring located in the parallelogram assembly. When setting up the machine it is advisable to select the minimum amount of down-force pressure and increase as required.

Field checks must be assessed at operating speed to accurately gauge results.

5.1 Adjustable Spring Pressure

The spring down-force adjustment has 4 operating positions. To change the press wheel pressure or down-force requirements, lift the machine up so that the row unit sits on the down stop, remove the lynch pin and slide the adjustable pin out of the boss, move the spring to the next hole position and replace the pin and lynch pin. Moving the spring position upwards increases the down-force and press wheel pressure.



- Press wheel settings will vary depending on soil conditions and planting speed.
- Wheel track rows may need extra spring pressure to achieve results.

5.2 PRESS WHEEL ADJUSTMENT (IN and OUT)

Depending on the ground conditions the press wheel assembly may need to be adjusted in or out to achieve a better close on the seeding trench. To adjust simply remove the Nyloc nut (15/16th spanner required) that mounts the press wheel and remove or add spacer washers behind the press wheel as required. Replace the Nyloc nut and tighten firmly.

Remove the press wheel and add or remove shims as required. The press wheel is generally set away from the opening slot as this tends to close the seed trench from the bottom up. When positioned right over the top of the trench, the press wheel can seal at the top but leave air pockets underneath (this depends on planting depth).

When applying Big N gas, the wheel is often better positioned over the top of the trench to help seal the gas up faster.

6 SEED BOOT ADJUSTMENT

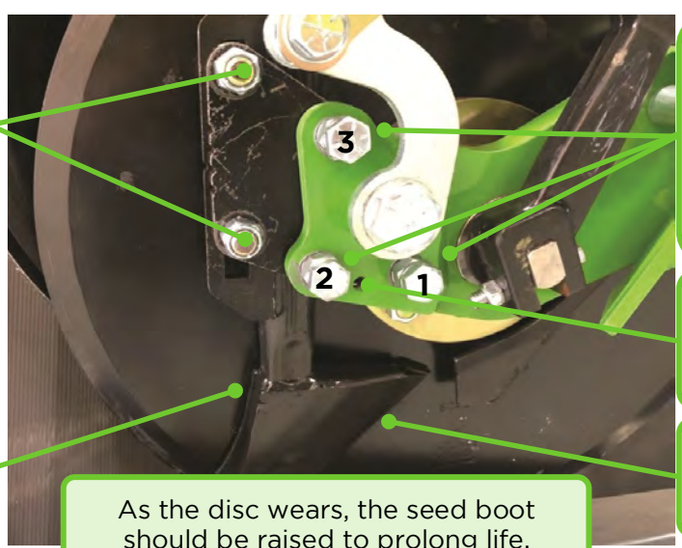
When replacing or resetting the seed boot it is important to ensure it is installed correctly for maximum performance. When replacing seed tubes the easiest way is to remove the two Nyloc Nuts used for vertical adjustment, push the cup head bolts in towards the disc and slide seed tube out. The seed tube is mounted on an adjuster plate which gives lateral adjustment to allow the seed boot contact with the disc to optimize mud-scraping. To adjust this, use two 3/4" spanners, using one on the locking bolt head and one on the adjuster nut. To lock, it's best to use the two spanners in opposite direction, watching boot for movement at the same time.

6.1 Adjusting the Seed Boot to the Disc

The seed tube also has vertical adjustment to allow the seed boot to be raised as the disc wears, this only requires one ¾" spanner to adjust. Lateral adjustment needs two ¾" spanners.

1. Set all adjuster nuts to mid position on their threads and lightly tighten top bolt only.
2. Using the bottom forward adjuster nut (1) set the leading point of the seed boot to slightly clear or lightly touch the disc and tighten bolt (tightening bolt will affect contact, adjust accordingly).
3. Using the bottom rear adjuster nut (2) set the bottom point of the seed boot to clear the by 3mm and tighten bolt (tightening bolt will affect clearance, adjust accordingly).
4. Use the top rear adjuster nut (3) to help maintain the seed boots position along the length of the length of the disc and tighten the locking bolt.
5. Make sure all bolts are tight (tightening bolts may cause slight distortion affecting seed boot contact, adjust accordingly.

For vertical adjustment, loosen the two Nyloc nuts and change height using the index marks for reference.



Arrows point to Lateral Adjuster Nut, lock bolts.

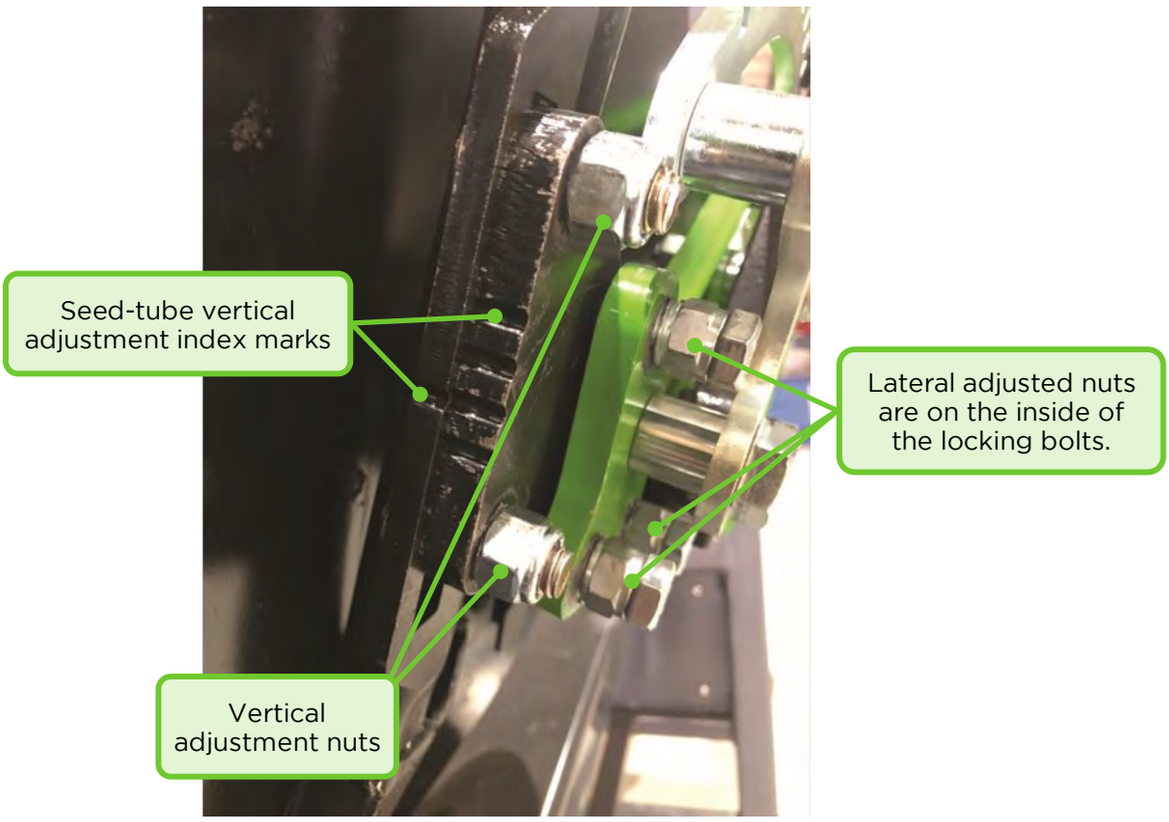
Use the 3 adjusting nuts to fine tune the seed boot position, by tightening or loosening as required.

If spring-loaded seed boots are fitted, there should be a stopper bolt fitted here.

The back of the seed boot should be off the disk as far as you can get. (2-3mm+)

The leading edge should be lightly touching the disc.

As the disc wears, the seed boot should be raised to prolong life.



Key Seed-tube adjustment points

- If the Tungsten Leading edge is not contacting the disc, mud can build up on the disc and wear inner wall of seed boot.
- If the Tungsten Leading edge is contacting disc too hard, disc may stall or disc may wear prematurely.
- If the rear bottom of the seed boot is too far away from disc or too low, furrow side of boot can wear prematurely.
- Once lateral adjustment is made, carefully sight gap between seed boot and disc while locking.

7 MUD SCRAPERS

The SX30P row unit can be fitted with an optional tungsten blade mud scraper to assist when operating in sticky conditions.

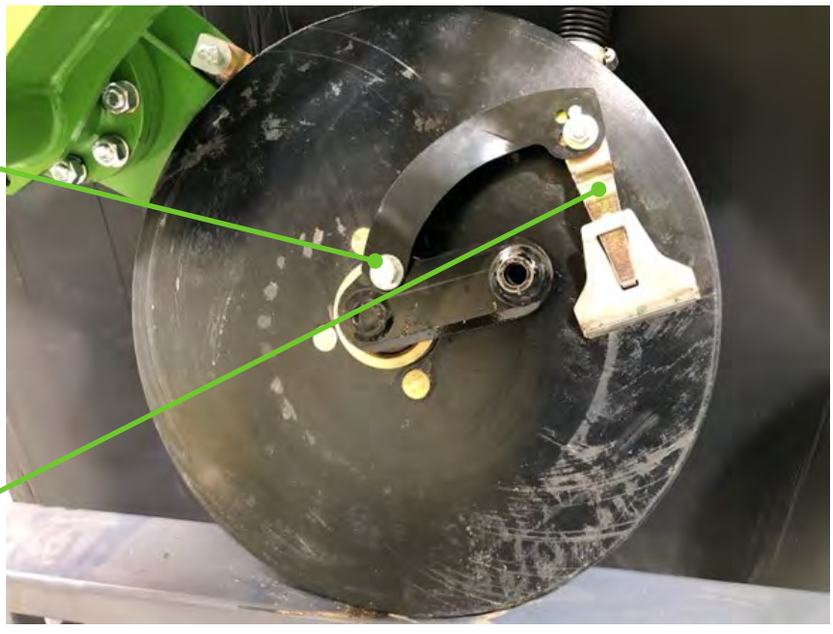
The internal blade scraper operating inside the cleaning wheel should be adjusted to run flat on the disc just inside the disc bevel (when the disc is new).

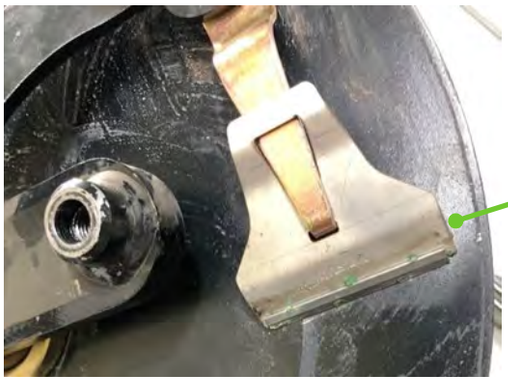
Ensure that the blade is kept inside the disc edge running on a smooth face as the disc can sometimes become dented on the edge from stones, etc.

To fine tune the blade scraping pressure, remove the tungsten blade and place an open-ended ring spanner over the end of the scraper arm and bend slowly. As a guide, the tip of the arm should be lightly touching the disc when the blade is removed.

To adjust the scraper blade angle, remove the cleaning wheel and loosen the adjustment bolt. Position the blade and re-tighten.

To adjust the pressure on the scraper blade, loosen arm and remove the blade. Place a ring spanner over the end of the arm and bend the mounting arm down until it lightly touches the disc. Replace the scraper blade.



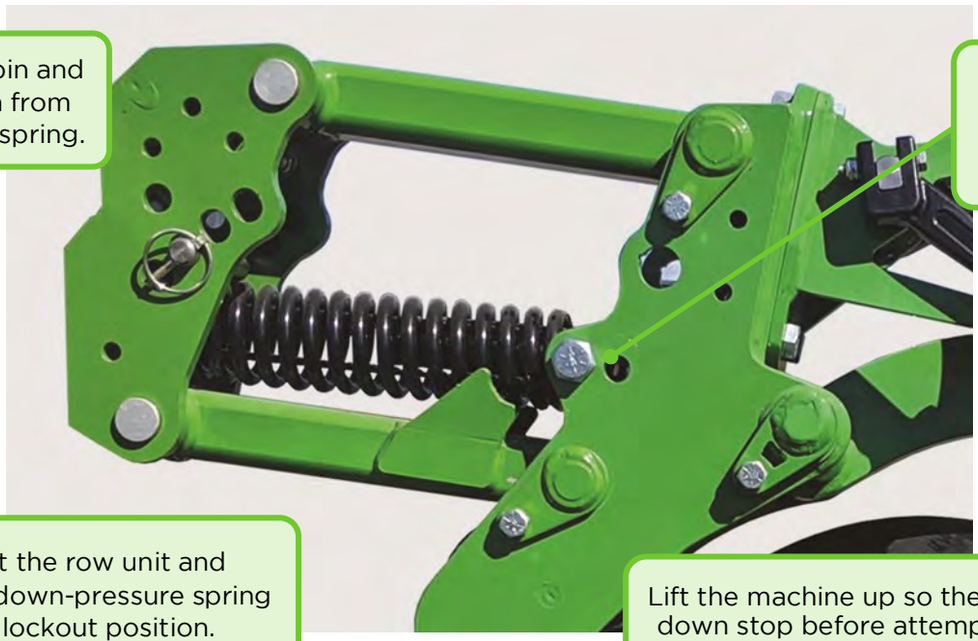


Keep the mud scraper approx. 10-12mm from the disc edge to avoid damage or loss if the disc becomes dented.

8 PINNING UP ROW UNITS

The SX30P row units can be locked up out of the way if a skip row or wider row spacing is required.

To pin row units up lift the machine up so the row units sit on the down stop. Remove the lynch pin from the down-pressure spring and slide the adjustable pin out of the boss. Relocate the pivot bolt assembly in the down-pressure spring to the rear hole. You can now lift the row unit with a front-end loader or forklift, the down-force spring can be lined up with the front lockout hole, replace the pin and lynch pin.



Remove the lynch pin and the adjustment pin from the down-pressure spring.

Relocate the pivot bolt and down-pressure spring to the rear hole.

Lastly, lift the row unit and replace the down-pressure spring into the lockout position.

Lift the machine up so the row unit sits on the down stop before attempting to remove the adjustment pin from the down-pressure spring.

Row unit shown in lockout position.

9 FINAL ADJUSTMENTS AND TIPS

- Discs should be replaced at 16¾" diameter to prolong seed boot life and maintain planting depth accuracy.
- Do not turn with SX30P row units in the ground – failure to do so may damage row units.
- To achieve the best results always check and make final adjustments in the field at working speed.
- The SX30P performance is dependent on soil type and ground conditions as such adjustments must be made according to current field conditions.
- Reducing your planting speed will minimise soil disturbance.
- Operating before wet heavy clay soils have had a chance to form an even crust on the ground can also add to increased soil disturbance and blockages. Often waiting an extra day or two can vastly improve seeding results and soil finish.

10 DECREASING SOIL DISTURBANCE

In soft, fluffy soil, the cleaning wheel can push the soil causing excess soil movement and ridging. To overcome this problem, ensure the cleaner wheel is approximately 13mm above the surface. If it is riding lower than this, raise the cleaning wheel to decrease soil push.

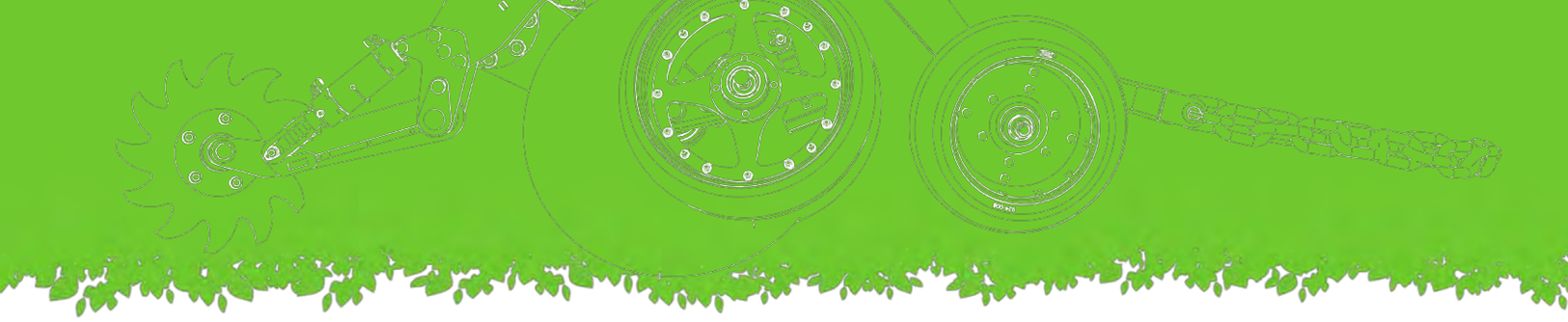
Setting your cleaning wheel too high can also increase soil disturbance or soil throw, check your cleaning wheel is approx. 13mm above the surface and adjust down if necessary.

Decreasing your ground speed will also result in less soil disturbance.

11 SX30P SERIES ROW UNIT OPTIONS

Available options for SX30P and row units include:

- **Diffusers**
  (Removes all the air from the air seeding lines to reduce seed bounce)
- **Rear chain harrows**
  (Leaves a flatter field finish and assists in reducing moisture loss by covering up the seeded rows with dry soil)



12 SERVICING AND MAINTENANCE

NEVER DISASSEMBLE THE DOWN PRESSURE SPRING AS THE SPRING COULD BE RELEASED CAUSING SEVERE INJURY OR DEATH

SHUT OFF THE TRACTOR ENGINE, REMOVE THE KEY FROM THE IGNITION AND BE CERTAIN THAT ALL MOVING PARTS HAVE STOPPED BEFORE SERVICING.

BEFORE SERVICING, MAKE SURE ALL SAFETY STANDS AND SAFETY PINS ARE IN PLACE.

NEVER PLACE HANDS OR FEET UNDER THE DISCS OR BETWEEN THE COILS OF A COMPRESSION SPRING AS THE IMPLEMENT COULD LOWER UNEXPECTEDLY.

12 SERVICING AND MAINTENANCE CONT.

12.1 Maintenance During the Break-in Period

After the first 5 hours of field operation

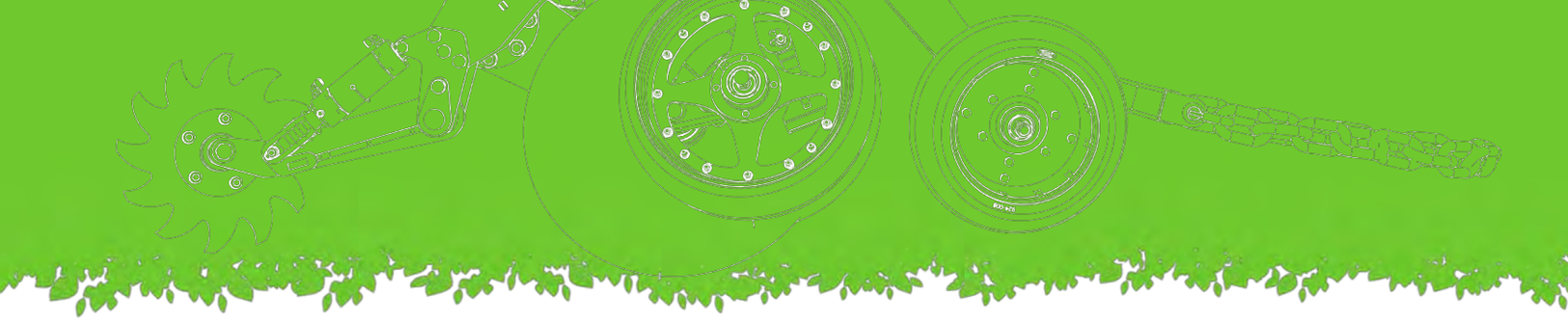
- Visually inspect all bolts and tighten any that have become loose
- Check the seed boot position on the disc is in the optimum position. See Section 6
- Check the cleaning wheel is adjusted correctly against the disc. See Section 4.2
- Check and tighten all wheel nuts
- Check bearing preload on the disc hub and tighten if loose. See Section 11
- Check and tighten V Bolts

12.2 Daily Maintenance

- Visually inspect row units for damage and replace if necessary
- Visually inspect bolts and tighten any that have become loose
- Grease the disc opener hub with 1-2 pumps of grease only (Excessive use of grease will pop the seals out)

12.3 Annual Maintenance – Every 2500 Hectares

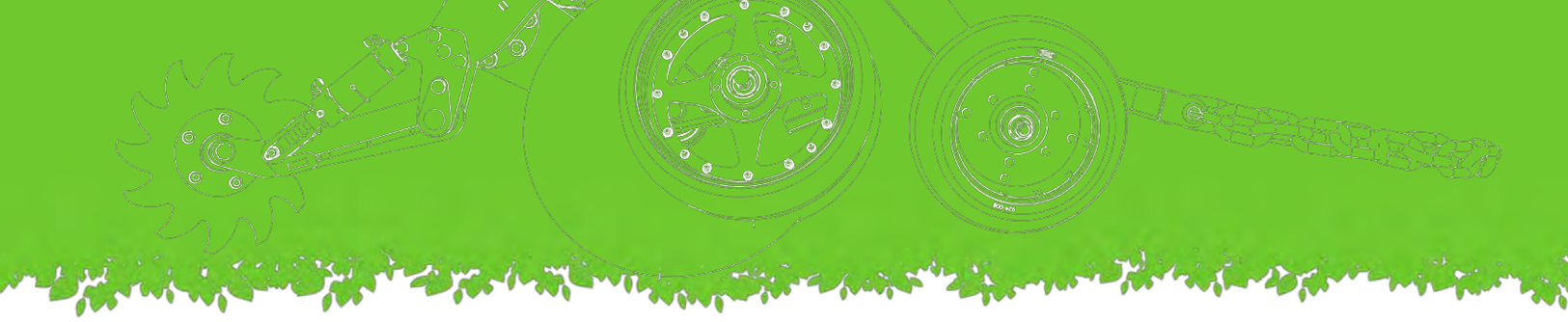
- Grease the disc opener hub with 2 pumps of grease only. (Excessive use of grease will pop the seals out)
- If shedding the machine for the season, grease the disc hub just prior to finishing so the new grease is lightly worked into the bearing assembly.
- Check bearings for excessive play and tighten pre-load or replace if necessary. See Section 11.
- Check the seed boot for excessive wear and replace or adjust if necessary. See Section 6.
- The original disc diameter is 18” if the disc is worn 1” in diameter, the seed depth setting will be reduced by ½”. Replace with new discs if required.
- When the disc has worn approx 1¼” (32mm) off the diameter (original diameter 18”), the seed boot is no longer running in the shadow of the disc and will start to wear depending on your individual soil type.
- Replace with new discs if necessary.
- Check that the cleaning wheel is running in the best position and adjust if required. See Section 4
- Clean and wash the machine down touching up any areas where paint has been removed.



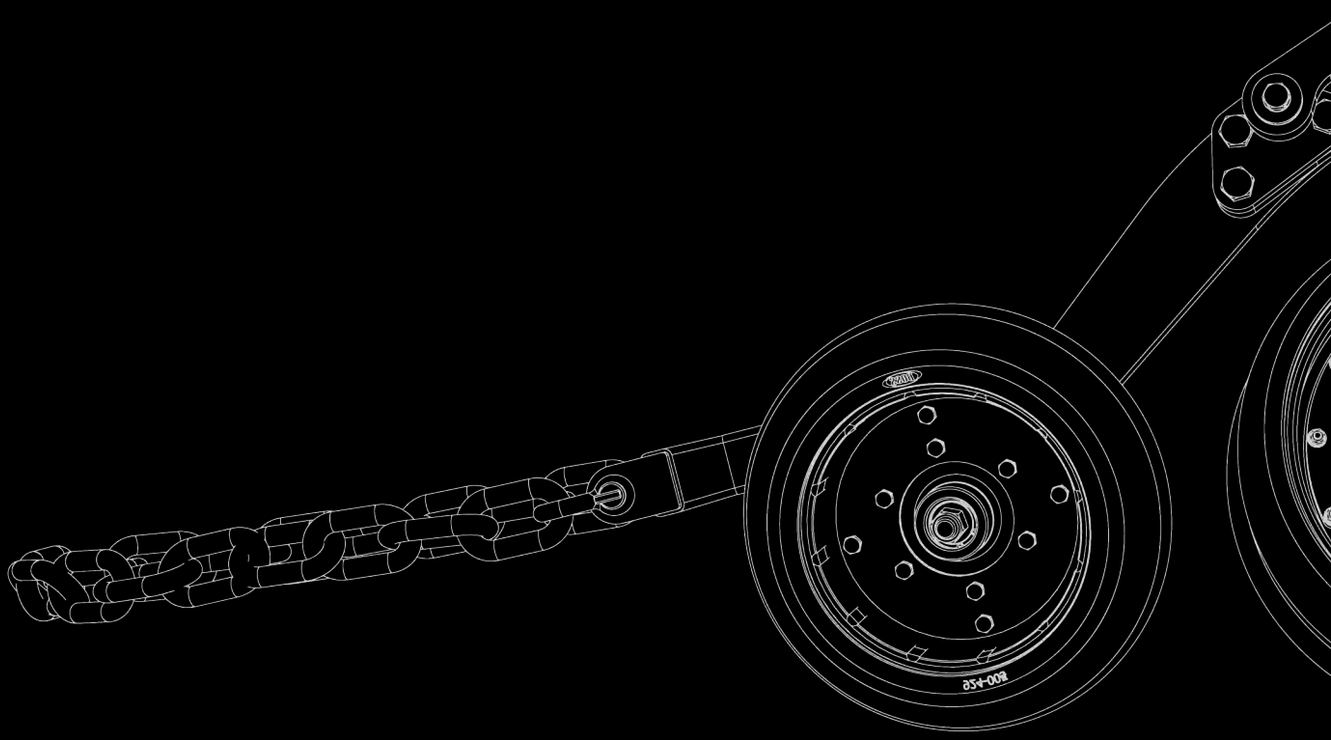
13 RECORDING CHART

Product	Seed Depth Setting	Cleaning Wheel Set-	Frame Height	Moisture Depth
Wheat				
Barley				
Chickpeas				
Sorghum				
Mungbeans				

PROBLEM	POSSIBLE CAUSES	POSSIBLE SOLUTIONS
The seed trench is not closing or under pressed.	Incorrect under-bar operating height	Check under-bar operating height and adjust if necessary. Refer to Section 2 and Table 2.1 for under-bar height settings guide.
	Not enough pressure on the press wheels	Increase the down pressure setting on the row unit. See Section 5.
	Press wheel not properly aligned with seeding trench	Move the press wheels to suit the seeding trench. See Section 5.2.
	Cleaning wheels set too low	Lift the cleaning wheel. See Section 4.1.
The seed trend is pressed too tight.	The down pressure is set too high	Reduce the down pressure setting on the row unit. See Section 5.
	The frame is not level	Level the frame. See Section 2.
The disc and cleaning wheel are building up with soil.	The mud scrapers are not working or have been lost	Replace or adjust mud scrapers as required. See Section 7.
	The cleaning wheel is too far away from the disc	Adjust the cleaning wheel closer to the disc. See Section 4.2.
	Soil conditions are too wet	Wait until soil conditions improve.
	A foreign object has become wedged inside cleaning wheel	Remove the cleaning wheel away from the disc. See Section 4.2.
The disc will not turn in loose or soft soil conditions.	The cleaner wheel is too close to the disc	Adjust the seed boot to recommended setting. See Section 6.
	The seed boot is adjusted too tight on the disc	Adjust or remove mud scrapers off the disc. See Section 7.
	Mud scrapers are adjusted too tight on the disc	See section above titled: The disc and cleaning wheel are building up with soil.
	The disc and cleaning wheel are building up with soil	You may have to increase your planting depth to help drive the disc.



PROBLEM	POSSIBLE CAUSES	POSSIBLE SOLUTIONS
There is excessive soil disturbance.	See Section 10	See Section 10.
Seed placement is inconsistent.	The down pressure is set too low	Increase the down pressure to maintain a constant planting depth. See Section 5.
	The frame is not level	Level the frame. See Section 2.
	The cleaning wheel is set too low	Raise the cleaning wheel. See Section 4.1.
	Under-bar operating height is incorrect	Check under-bar operating height and adjust if necessary - refer to Section 2 and Table 2.1 for under-bar height settings guide.
The seed tube is blocking with soil.	Maintain forward movement when lowering the row units into the ground	Do not lower the row units into the ground when the tractor is not moving.
	The soil conditions are too wet	Wait until soil conditions improve.
		Do not reverse with row units in the ground.
The seed depth is too shallow.	The opening disc is worn	For every 1” worn off the disc (originally 18” in diameter) seeding depth will be ½” shallower.Increase the seed depth setting. See Section 3.
Straw is “hair-pinning”	The down pressure is set too low	Increase the down pressure. See Section 5.
	Heavy and/or matted stubble conditions	Lower the frame to increase the disc cutting angle. See Section 2.
There is excessive wear on the seed boot	The disc opener is worn	Once the disc opener has worn approx. 11/4” (originally 18” in diameter) the seed boot is no longer operating in the shadow of the disc. Replace the disc if required.
	The row unit may be loose on the toolbar	Ensure all mounting bolts are tight and the row unit has not kicked over on an angle.



BOSS®

BOSSAGRICULTURE.COM.AU