# JOHN SHEARER

## *6M AS2400 Tyne Air-Drill*

## *6M AS2400 DDO Air-Drill*

# Operators Manual

# 142J8

# SAFETY

SAFETY FIRST

DO NOT OPERATE THIS IMPLEMENT WITH GEAR GUARDS REMOVED

DO NOT ATTEMPT ANY WORK ON THE IMPLEMENT WHILE THE IMPLEMENT IS IN MOTION. (I.E., CLEANING OF BOXES OR LUBRICATION OF DRIVES ETC.)

BEFORE WORKING UNDERNEATH THE IMPLEMENT (E.G., CHANGING POINTS) ALWAYS CHECK THAT THE IMPLEMENT IS ADEQUATELY SUPPORTED ON

BLOCKS.

# JOHN SHEARER LIMITED

ESTABLISHED 1877
INCORPORATED IN SOUTH AUSTRALIA

**HEAD OFFICE & FACTORY**
**PO BOX, 2466 REGENCY PARK**
**SOUTH AUSTRALIA 5942**

**TELEPHONE** **+61 8 8468 4190**
**STREET LOCATION 34 Burleigh Ave, Woodville North, S.A.**
**FAX No.** **+61 8 8468 4135 (SPARE PARTS)**
**Website** **www.johnshearer.com.au**
**Spare parts email** **spares@johnshearer.com.au**

## WHEN ORDERING SPARE PARTS, PLEASE STATE:

1. **MODEL, SERIAL NUMBER & SIZE (OF THE MACH. / IMP.)**
2. **PART NUMBER AND DESCRIPTION (OF THE SPARE PART).**
3. **NUMBER OF PARTS REQUIRED.**
4. **FORWARDING INSTRUCTIONS.**
5. **CORRECT NAME & ADDRESS OF DESTINATION.**


**MODEL & SERIAL NUMBER PLATE**

**IS PLACED ON THE RIGHT-HAND FRONT OF THE MAINFRAME.**

**MADE & PRINTED IN AUSTRALIA BY JOHN SHEARER LIMITED.**

M142J7 OCT 2022

# CONTENTS

Congratulations on the purchase of your new JOHN SHEARER PTY LTD implement. You have just joined the growing number of John Shearer customers and we trust that your implement will give you many years of satisfaction. The following information contained in this manual is provided with regards to your implement's operation, maintenance and warranty; however, should you require further assistance, contact your registered John Shearer Dealer.

## WARRANTY POLICY

This warranty ('**this Warranty**') provides information regarding the operation, maintenance and warranty of John Shearer Pty Limited's ('**John Shearer**') products.

### Warranty against Defects

John Shearer warrants to the original purchaser ('**you**' or '**your**') that any product manufactured by John Shearer ('**Product**') and sold to you whether directly or through a dealer ('**the Dealer**') will be free from defects to the extent set out in this Warranty.
John Shearer warrants that any Product or parts of a Product proven to be defective ('**the Defective Product**') will either be repaired or replaced by John Shearer.
Products will only be proven to be defective by a person appointed by John Shearer.
John Shearer holds the discretion to determine whether a Defective Product is to be repaired or replaced.
Any Defective Product must be returned to the Dealer at your cost within 12 months of delivery of the Product to you.
No warranty is given in relation to:

- any Product that has been misused;
- any Product that has been used contrary to its normal and, or intended use;
- any Product that has been used contrary to the recommendations of John Shearer and, or the Dealer;
- any Product that has been altered, modified or had any parts substituted in any way not authorised by John Shearer and, or the Dealer;
- any defect of which you should have reasonably identified by examining the Product or of which you were notified of; and
- general wear and tear during normal use of the Product.

All defects must be reported immediately by you to the Dealer.

### Modifications by John Shearer

John Shearer reserves the right at all times to vary, modify and, or improve its Products or parts without notification.
John Shearer has no responsibility to vary, modify and, or improve Products sold to conform with any such modifications.

### Freight and Travel Charges

John Shearer accepts no responsibility in relation to:

- travelling and, or freight charges; and
- damage caused during travel and, or freight.

### Limitation of Liability

To the fullest extent permitted by law, John Shearer and the Dealer will not be liable for any actions, suits, proceedings, claims, demands, costs, expenses or damages whatsoever which may arise either directly or indirectly in respect of the Product, including but not limited to negligent use of the Product.
To the fullest extent permitted by law, any non-compliance with this Warranty will automatically void any warranty given by John Shearer in relation to the Product.
No warranty is given if you have breached any terms and conditions forming part of the contract between you and John Shearer and, or the Dealer by which the Product was sold to you.
John Shearer will not be held responsible for any third party warranties offered in addition to the warranties offered under this Warranty. Any third party warranties are directly between you and the third party offering those warranties.

### Consumer Rights

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.
The warranties given by John Shearer under this Warranty are in addition to your other rights and remedies under the Australian Consumer Law in relation to the Product.
However, to the fullest extent permissible by law, John Shearer does not provide any consumer guarantees which are not required to be given at law.

### Service and Maintenance

It is your responsibility to:

- maintain and operate the Product in a safe and correct manner and in accordance with the specifications and operating limitations set out by John Shearer; and
- service the Product regularly in accordance with the recommendations of John Shearer.

### Claims

All claims under this Warranty are to be sent to for the attention of Franco Perrotta at John Shearer Pty Ltd. P.O. Box 2466 Regency Park SA 5942
For further assistance, contact the Dealer.

### Warranty Provider

This Warranty is provided to you by:
John Shearer Pty Limited
34 Burleigh Ave, Woodville North SA 5012
(08) 8468 4190
info@johnshearer.com.au

## PRE-DELIVERY CHECK

1. On delivery of AS2400LT AIR SEEDER CULTIVATOR, ensure there are no shortages.

2. Check Implement equipment to ensure as ordered.

3. Check for trans-shipping damage.

4. Refer to the lubrication section, page 20, for greasing and routine check-points.

5. Check and tighten bolts and nuts (including wheel nuts).

6. Check Tyne and Double Disc Opener spacing.

7. Ensure that implement is fully assembled and operating correctly.

8. Demonstrate and explain the operation to the client.

9. Explain the terms and conditions of the Warranty to the client.

## STORAGE

At the end of the season, the following steps should be taken to maintain and protect your air seeder throughout the off-season.

- Prop lids open 25 mm - 30 mm to relieve pressure on the lid seals.
- Open the bottom tray.
- Operate the roller to clean all particles of grain and fertiliser.
- Disassemble seed cup assembly to clean the rollers thoroughly.
- Worn or damaged parts should be replaced or repaired where necessary.
- Relieve weight off tyres.
- Lubricate all grease fittings.
- Remove flexible plumbing from the implement and store it dry and out of sunlight.

## SPECIFICATION

| | | | | | |
|---|---|---|---|---|---|
| No. OF SOWING ROWS | | 47 | 40 | 35 | 29 |
| SOWING WIDTH: | m | 5.87 | 6 | 6.12 | 5.88 |
| | (ft) | (19'3") | (19'8") | (20'1") | (19'4") |
| SOWING SPACING: | | 125mm (5") | 150mm (6") | 175mm (7") | 203mm (8") |
| BOX CAPACITY: | | | | | |
| Rear – fertilizer - | kg | 1425 | 1425 | 1425 | 1425 |
| | (lb) | (3142) | (3142) | (3142) | (3142) |
| Front – seed - | kg | 966 | 966 | 966 | 966 |
| | (lb) | (2130) | (2130) | (2130) | (2130) |
| DDO DRILL: | | | | | |
| DDO Type - | | Parallelogram | | | |
| Travel (Total) - | | 254mm (10") | | | |
| Disc Size - | | 15" x 4mm | | | |
| DDO Spacing: | | | | | |
| Between Rows - | | 1100mm | | | |
| Along Rows - | | 250mm | 300mm | 350mm | 406mm |
| Weight Empty - | kg | 7193 | 6767 | 6463 | 6097 |
| (approx.) | (lb) | (15857) | (14918) | (14248) | (13441) |
| TYNE DRILL: | | | | | |
| Tyne Type – | | "630" spring release | | | |
| Jump Height – | | 250mm (10") | | | |
| Tyne Breakaway Force – | | 16mm diameter spring, adjustable to a maximum 158 kg (350lbs) | | | |
| Tyne Spacing: | | | | | |
| Between Rows - | | 550mm (21.65") | | | |
| Along Rows - | | 500mm (19.68") | | | |
| Weight Empty - | kg | 6420 | 6158 | 5971 | 5747 |
| (approx.) | (lb) | (14153) | (13575) | (13163) | (12669) |

| | | | | | |
|---|---|---|---|---|---|
| COIL TYNE DRILL: | | | | | |
| Tyne Type – | | 25mm (1") Square Coil Tyne | | | |
| Tyne Spacing: | | | | | |
| Between Rows - | | Minimum 550mm (21.65") | | | |
| Along Rows - | | Minimum 500mm (19.68") | | | |
| Weight Empty - | kg | 5447 | 5330 | 5246 | 5129 |
| (approx.) | (lb) | (12008) | (11750) | (11565) | (11307) |

| | |
|---|---|
| BLOWER: | |
| Max speed - | 4000 rpm |
| Hydraulic flow rate: | 15"blower: 40 lpm (10.4 gpm) |
| | 19"blower: 52 lpm (13.4 gpm) |
| Hydraulic pressure: | 17.2 mPa (2500 psi) |
| SEED & FERTILISER DISTRIBUTORS: | |
| Seed - | Fluted roller for common seed and fertiliser |
| Fertiliser - | Fluted roller for common seed and fertiliser |
| Gates - | Adjustable gate with handle |
| GEARBOX: | Easily switchable gears to adjust roller speed |
| OPTIONAL EQUIPMENT: | Coulter Bar |
| | Finer calibration roller |
| | A wide range of Points & Fittings |
| | Spring harrow bar |
| | Press wheel bar |
| | Dual seeding kit |
| | Auger kit |

Due to our policy of continuing improvement, these specifications are subject to change without prior notification.

# SAFETY

## GENERAL SAFETY

1. All farm machinery is potentially dangerous and should be treated with caution and respect.

2. Never allow anyone to ride on the tractor drawbar or the air drill. The person(s) riding may fall and be seriously or fatally injured.

3. Machinery should be operated ONLY by persons responsible and qualified to do so.

4. Never allow anyone to climb or play on the tractor or air seeder. They may fall and be seriously injured.

5. Follow all safety precautions in your tractor and air seeder manuals.

6. Always exercise extreme caution in the vicinity of sharp edges and points. Ensure guards are always fitted during operation.

7. Footboards, footsteps and other machine surfaces may be slippy when wet or muddy. Apply extra caution in wet conditions and early morning when surfaces are wet.

8. The ladder is designed for one man walking only, carrying heavy bags or boxes can cause serious injury. Relaying or lifting machine is recommended to transfer things onto the platform.

9. At any time using the ladder, face towards the platform both upstairs and downstairs

10. Keep a first aid kit in the tractor at all times.

11. Pay attention when handling agricultural chemicals, and wear necessary protective clothing or equipment when required.

12. Clean hydraulic oil is essential for long service life and proper functioning of the machine; **ISO 68** or the same level of hydraulic oil is recommended in the circuit. Engine oil is not best in practice even if the viscosity is in the range since seals may cause erosion when engine oil is contaminated with water.

## OPERATION SAFETY

1. Be sure person(s) are standing clear when starting or moving the tractor and air seeder.

2. When air seeder is being operated or transported, be sure all person(s) stay away from rotating shafts, gears and pulleys. If a person's limbs or clothing is caught by the rotating parts, serious injury or death may result.

3. When calibrating, **KEEP** your hands and other person's hands clear of the gears and motors. If hands are caught in gears, serious injury can result.

4. Before starting the calibration test, ensure the air seeder cultivator and tractor are parked in a safe and stable area. Shut off the tractor hydraulic system and engage the parking brake to prevent movement. If the tractor and air seeder unit rolls whilst you or others are under the air seeder tank, serious injury or death might occur.

5. Never stand between the tractor and air seeder when hitching the air seeder unless all tractor controls are in neutral and the parking brake is set. The tractor or tractor and airseeder could roll backwards, resulting in serious injury or death to you or those nearby.

6. Operate the air seeder at a sowing speed of **8 - 12** km/hr (5 -7.5mph).

   Sowing too slow may cause overseeding at a low sowing rate (for example, 2kg/hec for canola);
   Sowing too fast can result in poor contour following and uneven sowing depth.

   More extreme conditions can cause more significant vibration and damage the air seeder.

7. Apply extra care when operating the air seeder on hillsides. The tractor or air seeder may tip over if:

   It strikes a hole, ditch or other irregularity, resulting in serious injury or death to the operator or those nearby.

   The maximum GRADE OF THE ROAD (slope) should be no more than **25% (1:4)**.

8. **DO NOT** make sharp turns (**over 40°**) on both left-turn and right-turn. Sharp turns may cause machine tilting, may damage the ladder or auger on the machine and can cause serious injury.

9. Never allow anyone to ride on the air seeder while it is being operated. The person riding may fall and be seriously or fatally injured or maybe caught by rotating shafts, belts, or pulleys and be fatally or seriously injured.

10. To avoid personal injury or death, always stay clear of the folding wings when raised or lowered into the field position. If the hydraulic system fails, or if the hydraulic lever was accidentally operated, the wings could drop, resulting in serious injury or death to you or those nearby.

11. KEEP CLEAR. Make sure all persons are clear of the area of air seeder before and during operation.

12. Always relieve the pressure in the hydraulic system when the air drill is not being operated.

13. Tank seal must not leak during seeding or fertilising operations. Leaky seals can cause product distribution to stop and start or cease altogether. This kind of erratic distribution will leave unseeded strips in your field.

14. Never operate air seeder without fan motor case drain hose hooked up. This hose must be hooked up unrestricted to the tractor hydraulic reservoir. Failure to properly install the fan motor drain hose will result in irreparable damage to the fan motor.

15. Do not use quick couplers to connect fan motor case drain hose and manifold case drain hose to tractor's hydraulic reservoir. Use 3/8" swivel adapters only. This line must be unrestricted **AT ALL TIMES.** No quick couplers can be used. If a quick coupler fails or is disconnected during field operations, the fan motor will be irreparably damaged.

**TRANSPORT SAFETY**

1. Before towing the air seeder cultivator, read the transport safety recommendations in the tractor's operator's manual.

2. Always lock the tractor's 3-point linkage (lower 2 points) and air seeder hitch before towing the air seeder. Serious damage and injury could result from the cultivator separating from the tractor.

3. When towing the air seeder with the wings folded up, ensure sufficient clearance under all power lines. Minimum overhead obstructions must be higher than **3.8m**. Serious injury or death can result from contact with electrical lines when moving or operating the air seeder.

4. When towing the air seeder with the wings folded (up), be sure there is sufficient clearance of the road, the overall transport width of the machine is **2.97m**. Check local road regulations for the allowance.

5. During transport, **DO NOT** travel over **30** km/hr. Over speed can result in losing control of the airseeder, damage to the tyres and bearings of the airseeder and a high risk of a traffic accident.

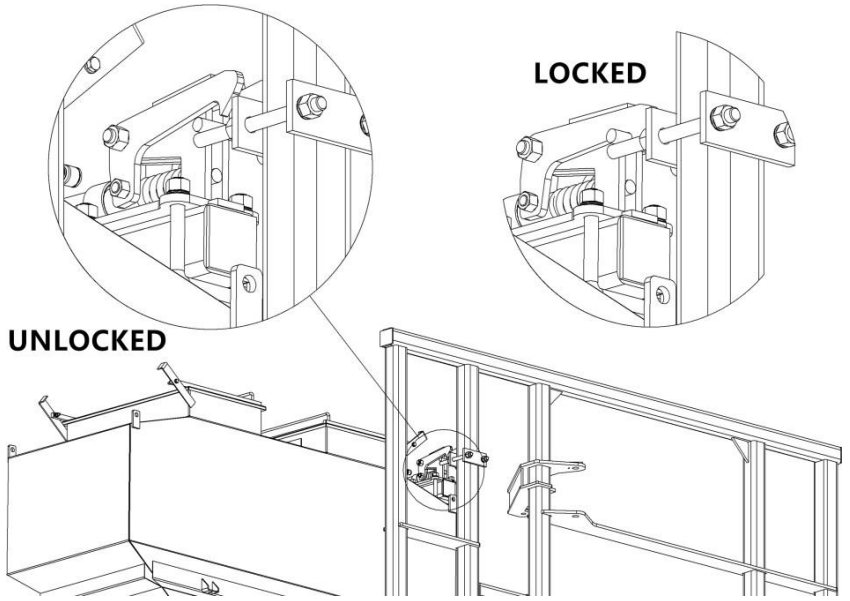
6. Take extra care when towing with the hoppers fully filled.

7. Close drop jack before moving the machine.

8. Close the ladder and lock the latch before moving the machine. The ladder can be damaged during transport.

9. Always make sure to lock the wings in the folded position, and transport locks are engaged before towing the air seeder. Serious damage to the cultivator and serious injury or death could result from the wings falling during transport.

10. Before transport, **CHECK** the necessity to fit running lights according to local road regulations.




11. Regulate your speed on hillsides and curves when transporting the cultivator and air seeder. Loss of tractor control could result in serious damage to the air seeder and possible serious injury or death to you or those nearby.

12. Be sure no one is standing near the air seeder when hitching the air seeder to a tractor. Severe injury or death could occur if a person(s) nearby were struck or caught by the air seeder.

**MAINTENANCE SAFETY**

1. Always put all tractor controls in neutral, set the parking brake, and shut off the engine before servicing the air seeder. If tractor and air seeder were to roll, you could be seriously or fatally injured.

2. Do **NOT** enter the air seeder tanks if not necessary; cleaning is available through the gate. **Never** enter the hopper when the hopper is not emptied. Use SOP for **Confined Space** if you have to. You may have difficulty getting out and may hurt yourself from falling through the top hopper door. Check Oxygen content and toxic contents before entering.

3. Do not lubricate the air seeder when it is in motion. You may fall and be seriously or fatally injured.

4. Do not loosen or disassemble hydraulic components when there is pressure within those components. Escaping hydraulic fluid under pressure has sufficient force to penetrate the skin. Always relieve the pressure in the hydraulic system before making adjustments to the hydraulic system.

5. Check all hydraulic hoses periodically for signs of rupture or leaks. Always use wood or cardboard as a backstop, and wear gloves and eye protection when inspecting the hydraulic system for leaks. Spurting hydraulic fluid can cause injury if it penetrates the skin or the eyes. If injured by escaping hydraulic fluid, seek medical assistance immediately.

6. Always allow hoses or valves which contain hot fluid to cool to a safe temperature before handling or disconnecting these parts.

7. Always wear safety glasses or goggles and gloves when working on the hydraulic system.

8. The tank must be pressurised to maintain an accurate metering rate. Air leaks around the lid seals and the seed cup can cause uneven distribution.

9. Be aware of worn or ruptured electric wires, and a short circuit may cause fire or injury to people who contact it.

10. When performing maintenance work on the fan, be sure the tractor engine is shut off to prevent the fan from being accidentally operated. If the fan is accidentally operated, serious injury or death could occur to the person(s) performing maintenance.

**ASSEMBLY SAFETY**

1. Use an aligning punch to line up holes. Keep your fingers out of these holes. Any sudden movements of heavy components will severely injure or sever your fingers.

2. Be sure all bolts and hydraulic fittings are tight and all split pins are installed.

3. Use extra care when assembling guard-rail and hand-rail on tank platforms. The person assembling the railing may fall from the platform when no guard rail is in place.

4. Platform and ladder can be slippery if wet or muddy. Serious injury could result from falling from the air seeder platform or ladder. Always go upstairs and downstairs with your face facing the ladder.

5. Be sure all bolts on wheels are checked for tightness during initial transport or when first air seeding. Loose wheel bolts may result in the wheel falling off, causing serious damage to the air seeder and may cause serious injury to the operator or persons nearby.

6. When replacing main wheels, ensure the tyre size is **400/60-15.5**. The allowed load is 2900kg per tyre. Be aware of the correct size and right direction pattern of the tyre. Check the tyre pressure before operating.

7. When replacing wing wheels, make sure the tyre size is **265/75R16**. Be aware of the correct direction of the tyre. Check the tyre pressure before operating.

8. Wear gloves, heavy clothing and heavy footwear when assembling the air package and seed boots. Points and sharp corners of the cultivator can cause injury.

9. Do not walk across the top of the cultivator frame when assembling the air package. Serious injury could result if you fell.

10. Before applying pressure to the hydraulic system, ensure all connections are tight and the components are not damaged.

11. Keep the end of emergency drain line open (with dust cap) to prevent the over-pressure in the drain line. It can protect the oil cooler and manifold from blast in case the drain line is not working properly.

## SETTING UP

Congratulations on the purchase of your new Air Drill.

This manual has been prepared to ensure proper setup, operation and trouble-free service.

After reading this manual, please keep it in the carrier provided on the implement for quick and easy reference should any question arise concerning operation or service.

Your AIR SEEDER is designed to give maximum service life, but a routine lubrication and maintenance schedule must be followed as shown on the lubrication chart (see page 20)

**IMPLEMENT LEVELING "FRONT TO REAR"**

Fully raise the machine after phasing all the lifting cylinders.
Adjust the centre of the two-point linkage pins to about **500mm** above ground on the tractor.
Or use the level chain to adjust the two-point linkage height from the tractor.
Confirm levelling at working height.

**IMPLEMENT LEVELING "WING FRAME"**

After level front and rear, loosen bolts on the mount of the wing wheel arm.

**TURNING**

Avoid turning sharply with tynes/discs in the ground. Lift the machine out of the ground at corners and sow headlands separately to avoid oversowing.

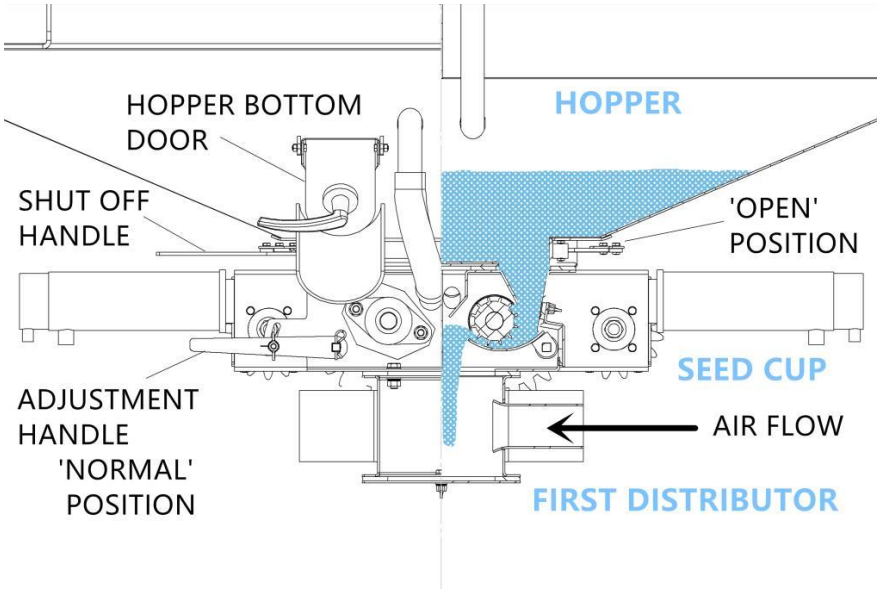

**SOWING RATES**

Select sowing rates as per the sowing chart. N.B. This chart is to be used as a guide only.
The new AS2400lt air seeder is sowing through the electric motor. After calibration, the sowing rate is automatically controlled by the Topcon Artemis system.

The critical data is the Cal Factor. It will show up after calibration. It very with different gate settings, sprocket settings, different seed types and densities of the seeds.

TAKE RECORD of the Cal Factor and settings helps calibration next season and can be a reference for troubleshooting.

## SEEDING FLOW




Seed and fertilisers stored in each compartment go through the hopper gate to the seed cup, where the sowing rate is controlled. The components from both hoppers are mixed in the first distributor.

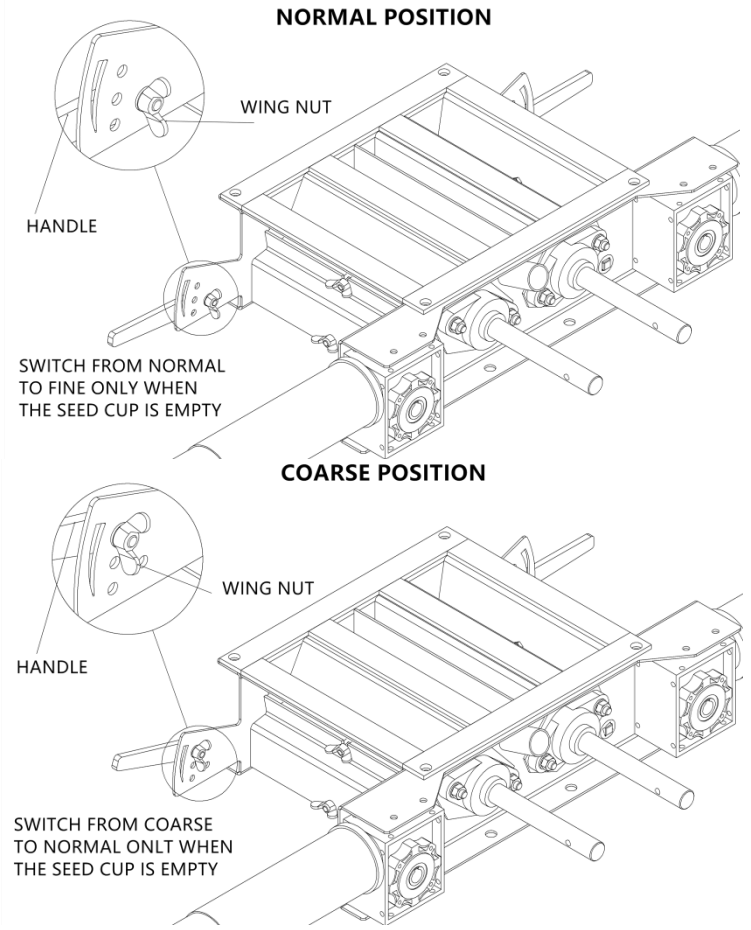
The mixture is sown to the riser and distributor heads by the air from the blower. In the default setting, both distributor heads contain the same mixture.

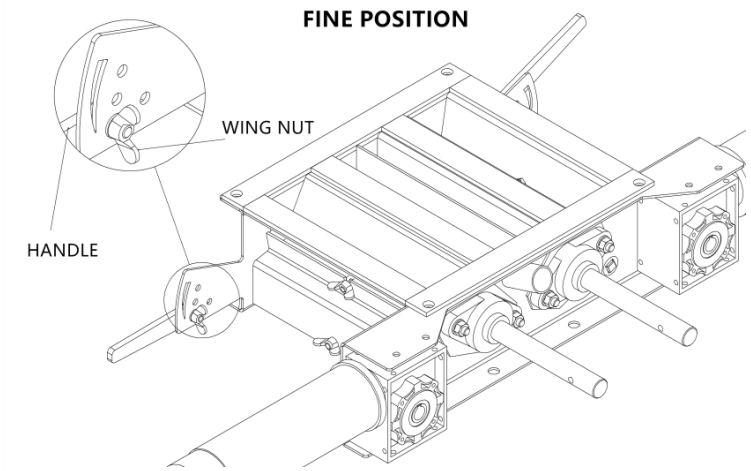
For dual seeding kits, seed and fertilisers are not mixed and are sent to risers separately. Each distributor head sows different components. And for each tyne, a dual seeding boot is fitted to distribute seeds and fertiliser separately.

***TO GET AN ACCURATE CALIBRATION RESULT, A PRERUN CALIBRATION TEST CAN HELP FILL UP THE GAPS AND CLEAN UP ANY REMAINING SEEDS IN THE PAST.***

## GATE SETTING

In the seed cup, seed and fertiliser metering rollers have adjustable gates at the metering point under the roller. This adjustment allows for the diversity in the size of seed and types of fertiliser. To ensure accurate metering of material, it is essential that these gates are correctly adjusted in accordance.






**PROCEDURE FOR RESETTING GATES IF REQUIRED**:

1. Empty the hopper and remove the seed cup from the hopper.
2. Use an 8mm wrench to loosen the wing nut and free the adjustment handle.
3. Adjust the handle to a proper position according to the 'GRAIN & FERTILISER CHART'.
4. Hold the wing nut and use the wrench to lock the handle tight.

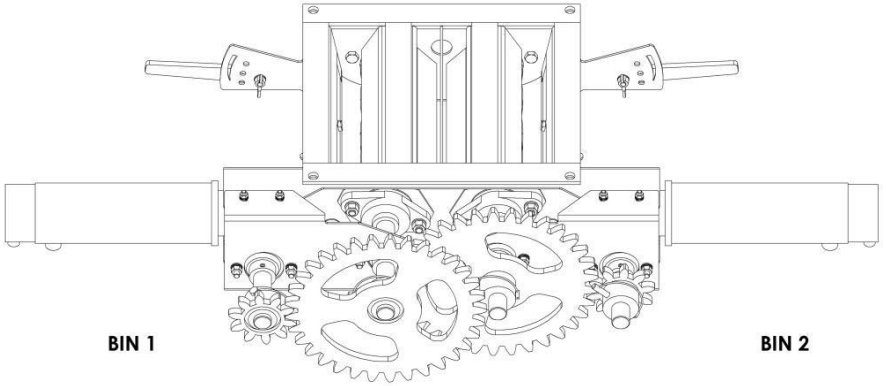
**'FINE' -'NORMAL' POSITION** is suitable for most seeds and fertilisers: Oats, Barley, Sunflower, Rice, etc.

**'NORMAL' -'COARSE' POSITION** is suitable for large seeds and has a higher rate: Lupin, Soybean, etc.
'COARSE' Position is also usable when cleaning or when changing products in the tank.

**'EX FINE' POSITION** is suitable for small seeds and lower rate: Lucerne, Canary, Canola, Millet, etc.

## GEARBOX SETTINGS

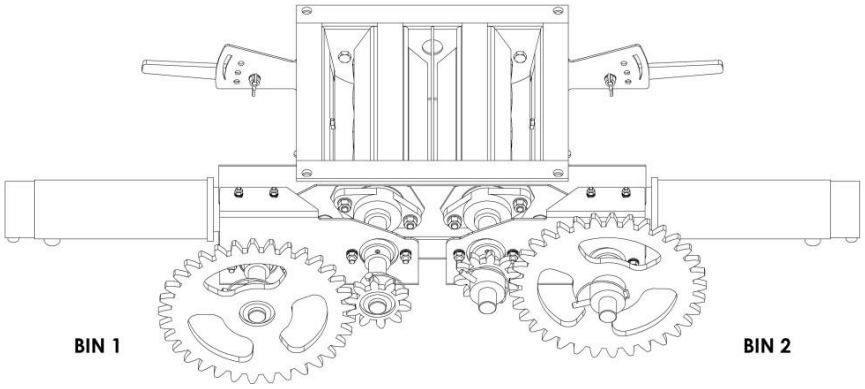
The calibration is powered by the electric motor and controlled through John Shearer App on the tablet; therefore, a proper setting is vital for accurate calibration.
The quick switch gears can be set to allow the electric motor rate between low to high, and special sets of gears are available to meet lower volume needs. The charts on pages 22-30 are a guide to what rate can be expected for various products. Be aware that this chart is a guide only, and for accuracy, a calibration check must be done before seeding.




The drawing shows a normal sitting position of how two pairs of gears fit into the 10 to 33 gear ratio.

**It is important to keep gears facing the right direction and position when switching the gear ratio.**

The flowing drawing shows the gear ratio of 33 to 10 when seeding at a higher rate.




## GRAIN AND FERTILISER BOX CAPACITIES

The Grain and Fertiliser box is fitted with a seed cup, allowing either grain or fertiliser in both compartments. The two compartments of the box are equal in volume, both 1200 litres (966kg Wheat or 1425kg Super).
Both compartments can be closed separately and sown at a different rate.
The first distributor is set to mix and bisect the outcomes from both hoppers and send them to each distributor's heads.
A dual seeding kit is also available; in this way, the first distributor separates each hopper, and one compartment comes to one distributor head.

## DISTRIBUTOR ROLLERS

The front hopper roller is suitable for small seeds like canola. It is specially designed to provide an extra shallow rate.
The rare hopper is recommended for big seeds like faba bean and oats with a higher rate. Fertilisers can operate in both hoppers. So set the seed hopper first and use the rest hopper for fert.

For dual seeding machines, a swop of the tubes behind the venturi is necessary to guide the seeds and fertiliser in the right boots.

## DDO & COULTER UNIT SPRING TENSION

Set DDO & Coulter unit spring tensions equally on each row.
DDOs on the front two rows are more likely to need tension. To avoid higher loads than necessary on the Tyne assembly components, use the minimum spring tension that achieves the penetration required.

## FERTILISER CORROSION DAMAGE

The hopper must be "COMPLETELY AND THOROUGHLY CLEANED OUT" after use, to help prevent corrosion. It is essential that the hopper is not left overnight with any fertiliser remaining. Particular attention should be paid to keeping the area around the critical distributor/bearing/gate components free of fertiliser. It is necessary to disassemble the seeding gate in the first distributor, as it can have remaining fertiliser on the curved seed gate.

This recommendation is applicable irrespective of the kind of fertiliser in use. Still, it is more critical with the higher analysis, high nitrogen fertilisers.

## HOPPER EMPTY

To empty either side of the hopper after seeding, like calibration, open the bottom clean out panel. Increase the target rate until the maximum speed is higher than 10.5km/h. And collect the seed or fertiliser by pushing the prime switch.

## SEEDING DEPTH ADJUSTMENT

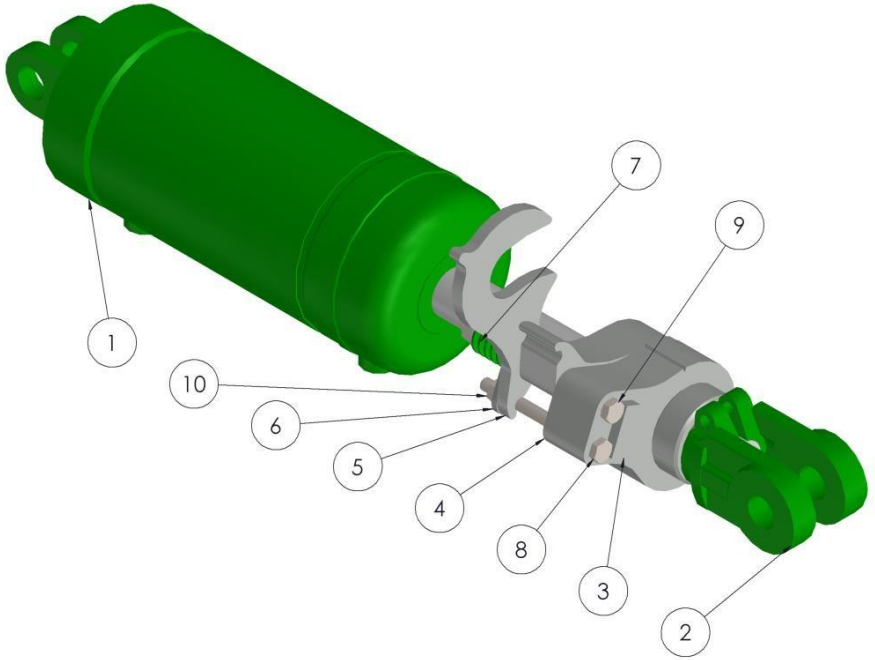
Air seeder 2400LT uses a physical leaf system (48130) on the master cylinder to adjust the machine's seeding depth. Open the leaf (item 5) until it stops at the lower bolt (item 8) will inactive the leaf plate. When the ram touches the end of the active leaf plate, the machine stops at that height.

Please put active and inactive leaf plates in sequence. Skip sequence or not fully inactive leaf may damage leaves during operation.

Since the lifting cylinders are phased to the left and right sides, it is IMPORTANT to keep the two master cylinders working at the same starting points and endpoints. Serious damage can occur if the two cylinders are not working on the same plane.

The ratio between the travel distance of the master ram and real machine depth is around 2.4. (each leaf plate is 5mm thick, so activating one leaf decreases the seeding depth by about 12mm). The more length of the ram-rod covered by leaf plate, the less the soiling depth of the machine.

There are 9 leaves on each ram, which can adjust 45mm. The default depth is 2 leaves inactive and 7 leaves active.
Disc machines rely more on their press wheels; more details on page 19.
More leaves can be added if low sowing depth is needed.




### DEPTH SENSOR SETTING

After setting to the proper depth, adjust the position switch at the pivot point of the front hitch.
The position switch is triggered when the hitch leaves the spring rod, and there is a "click" sound when triggered.

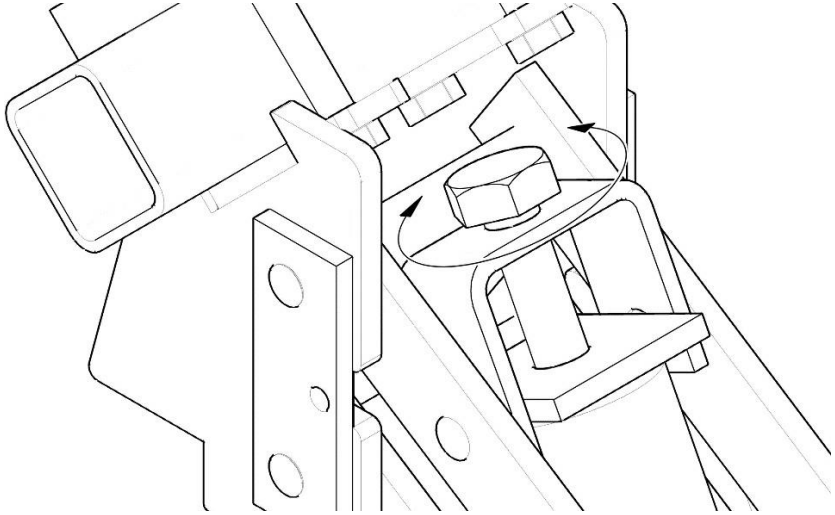
The machine needs the switch to be triggered to keep working. So once it is not triggered, the machine will stop seeding, and red crosses will appear on the top of the screen.

# DOUBLE DISC OPENERS

**DOWN PRESSURE**

For best results, set the pressure only enough to ensure adequate penetration. Packing pressure for use on the soft ground should be much lower than on the hard ground.

Turn the bolt as shown below to increase or decrease the spring pressure as required. Increasing spring pressure increases the downward pressure on the opener/press wheel.



**TURNING**

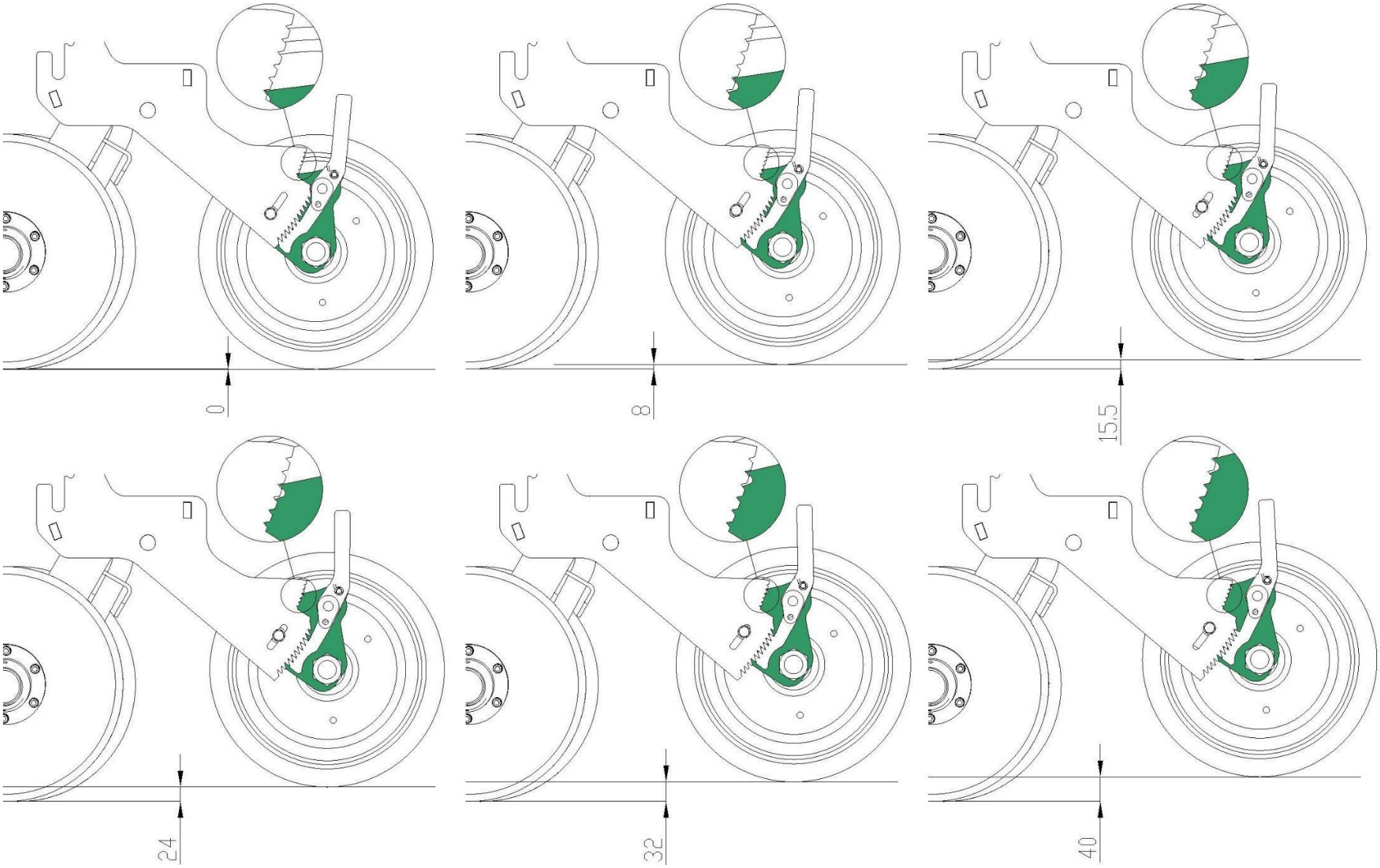
Lift the disc clear of the ground when turning to avoid damage.

## SAFETY FIRST

DO NOT OPERATE THE IMPLEMENT WITH CHAIN DRIVE GUARDS REMOVED.

DO NOT ATTEMPT ANY WORK ON THE IMPLEMENT WHILE THE IMPLEMENT IS IN MOTION. (I.E., CLEANING OF BOXES OR LUBRICATION OF DRIVES ETC.).

BEFORE WORKING UNDERNEATH THE IMPLEMENT (E.G., CHANGING POINTS, ETC.) ALWAYS CHECK THAT THE IMPLEMENT IS ADEQUATELY SUPPORTED ON BLOCKS.


0
8
15.5
24
32
40

## MAINTENANCE OF "T" BOOTS

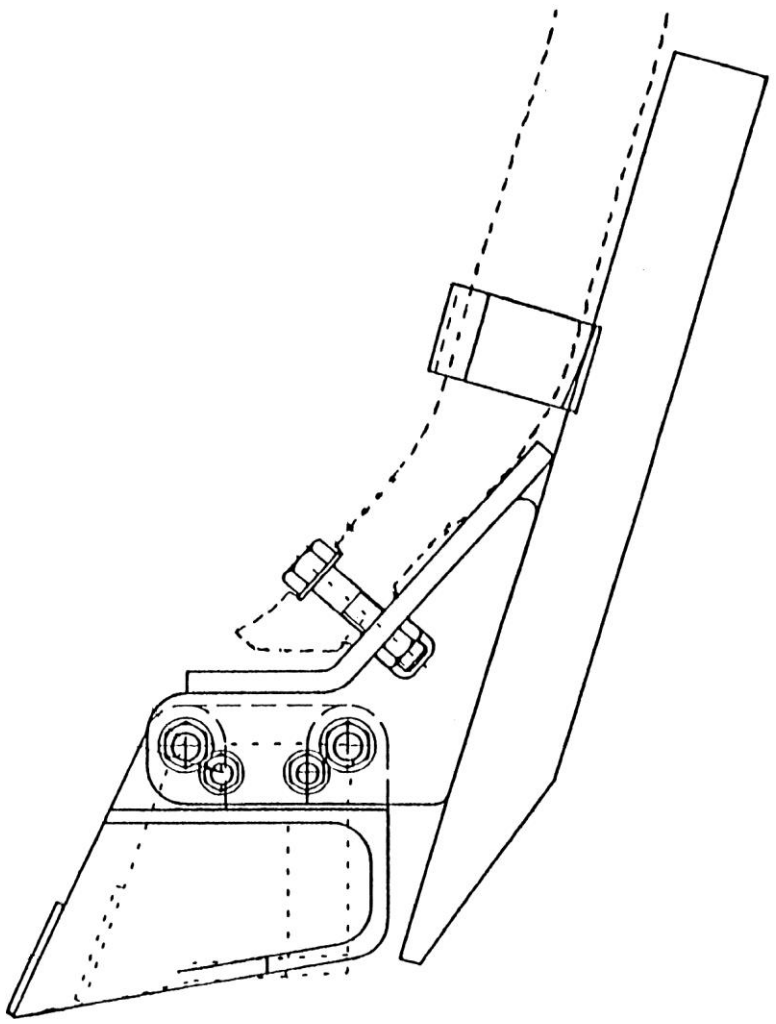
A tungsten carbide insert has been fitted to the leading edge of the blade

Because the blade is expected to carve a channel through stony abrasive soils, stones and rocks, etc., DO NOT DISREGARD NORMAL MAINTENANCE. Continual maintenance of the blade is necessary. The tungsten carbide will slowly wear, but blade surfaces wear more quickly.
Regularly check that all bolts are tight
Ensure that the boot is kept clean of blockages due to the build-up of grain or fertiliser so that an unrestricted flow of product is possible.

**TENSION ON SPRINGS**
The pressure is taken at the bolt that holds the boot on. The correct pressure on tynes is important; the tynes must work on their springs and vibrate to crumble the soil and create tilth over the seed.

**3 POINT LINKAGE MACHINES**
When using 3-point linkage implements fitted with "T" boots, there are guidelines to follow to minimise wear.

a) When drilling, you must sow in a straight line.
b) If you turn without lifting, you can cause excessive wear on the sides of blades and sowing tubes.
c) Lift implement when you come to a corner.
d) Be in motion when entering the ground and lift when stopping.
e) Do not let implement rollback. If you do, sowing tubes will block with soil forced into the opening.



"T" BOOT

## LUBRICATION CHART

| Item | Operation | Schedule |
|---|---|---|
| Wheel Hub | Grease | 200hrs |
| Axle Rockshafts | Grease | Daily / 10hrs |
| DDO Press wheel | Grease | 200hrs |
| Tynes | Grease | Daily / 10hrs |
| Trimming Screw | Grease | Annually |
| Tyres | Check Pressure | Daily |
| Gear | Check adjustment | Daily |
| Gear | Grease | Daily |
| General Inspection (Nut & Bolts) | Check for tightness | Daily |
| Hopper | Clean out at the end of each day (Particularly Hydroscopic Fertiliser) | Daily |
| Grease Nipples | Lubricate all before storage at the end of each working period | Seasonally |

DO **NOT** LEAVE FERTILISER IN THE HOPPER OVERNIGHT. (PARTICULARLY HYGROSCOPIC FERTILISER, WHICH WILL TAKE UP MOISTURE AND HARDEN)

| TYRE PRESSURES ARE IMPORTANT |
|---|
| OVER INFLATION will impair flotation –<br>Increasing sowing depth variations as ground conditions vary.<br><br>UNDER INFLATION can result in tyre failures. |

| TYRE SIZE | 6M 2400LT<br>Tyne |
|---|---|
| **CENTRE**:<br>400/60 15.5<br>TYRE PRESSURE<br>(kPa) | 360 |
| psi | 52 |
| **WING:**<br>265/75 R16<br>TYRE PRESSURE<br>(kPa) | 350 |
| psi | 50 |

| SPEED LIMIT 30 km/h (10 km/h SOWING) |
|---|

## TYRE PRESSURES

# NUT TORQUE SPECIFICATION CHART

This chart is a guideline on the ideal way to bolt and torque nuts used during the manufacturing assembly process for John Shearer. Employees at John Shearer and Vendors supplying part assemblies will use this as a guide to help them perform their duty in the specified manner.

| NUT SIZE | TORQUE SPECIFICATION (Nm) | | | |
|---|---|---|---|---|
| | CLASS 4.8 | | CLASS 8.8 | |
| | Zn PLATED | NYLOCK | Zn PLATED | NYLOCK |
| M6 | 6 | 8 | 11 | 13 |
| M8 | 15 | 19 | 28 | 31 |
| M10 | 29 | 36 | 55 | 60 |
| M12 | 50 | 61 | 95 | 103 |
| M16 | 125 | 146 | 240 | 256 |
| M20 | 240 | 276 | 475 | 482 |
| M24 | 425 | 478 | 825 | 865 |
| M30 | 850 | 920 | 1650 | 1704 |
| M36 | 1450 | 1540 | 2850 | 2918 |

## OPERATING INSTRUCTIONS

**1.** Use a sufficiently powerful CAT3 tractor that is heavy enough to tow the drill safely.

**2.** Hydraulic fan, connect the hoses in the following order:

**First:** connect the Case Drain line 3/8" hose to the hydraulic reservoir. Hose without quick connection. **IMPORTANT:** THE HYDRAULIC RESERVOIR OR CASE DRAIN LINE SHOULD HAVE NO BACKPRESSURE.

**Then:** connect the Blower Inlet line 3/4" hose to the tractor power port. **Blue** short label hose

Connect outlet line 3/4” hose to the tractor return port. **Blue** long label hose

Disconnect in the reverse order to prevent motor seal damage.

**3.** Connect the inlet & outlet line of the lifting circuit and folding circuit to correct tractor hydraulic ports. **Red** Label hose

**4.** Check tyre pressures before seeding.

**5.** Check lubrication before seeding.

**6.** Adjust the drills or double-disc openers to proper working loads check. Boots and air pipes are correctly connected.

**7.** Set the working depth of the machine through the depth control leaf system or DDO depth adjustment.

**8.** Check the levelling of the machine at the working height.

**9.** Calibrate each compartment before seeding.

**10.** Fill the hoppers, close hopper doors, and **Pack up** the ladder.

**11.** Raise the air drill before moving to the field.

**12.** Raise the air drill when turning during operation.

**13.** Operate the air drill at a speed of 8-12 km/hr (5-7.5 mph).

**14.** After long term storage, check to see that all drive mechanisms and hydraulic equipment are functioning correctly. Check that the air tubes are not blocked or perished.

## SET UP ON TABLET
## (For John Shearer control box)
## (For other systems, refer to the separate manual)

1. Connect machine and tablet through Bluetooth.

2. Configure the machine as the app guides; the ideal travel meter after 100 poles count down is around 128m; it varies depending on the tyre pressure, the load of the machine and ground condition.

3. The row number is the machine row number, and the sowing width is on Page 7.

4. Before doing a calibration test, set the first distributor according to the chart on Page 27 and the setting manual on Page 14.

5. **For a higher seed rate**, use a larger holder to capture calibration seeds; they can be overfilled.

6. Weight the pan or holder before the calibration.

7. Scale the collection, and the row number is the machine row number.

8. A high-resolution scale helps the accuracy of the calibration.

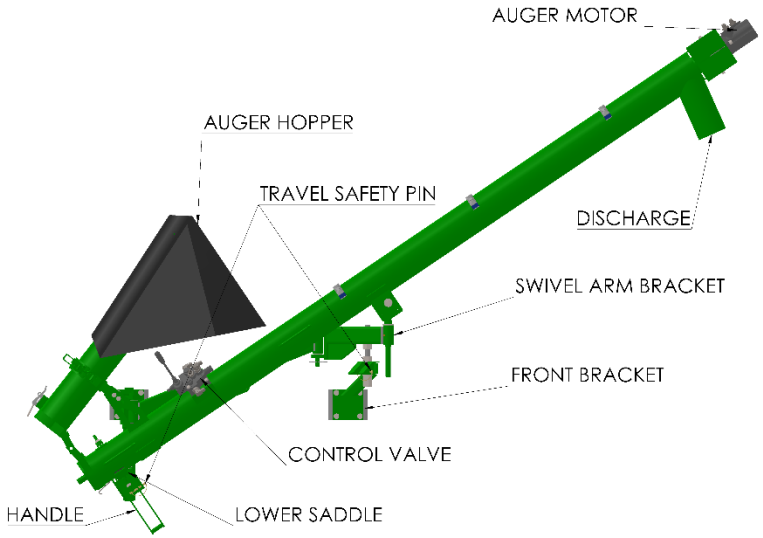
9. The calibration result is more accurate when the second time than at the first one.

10. After calibrating both bins, the machine is ready to workin the field!

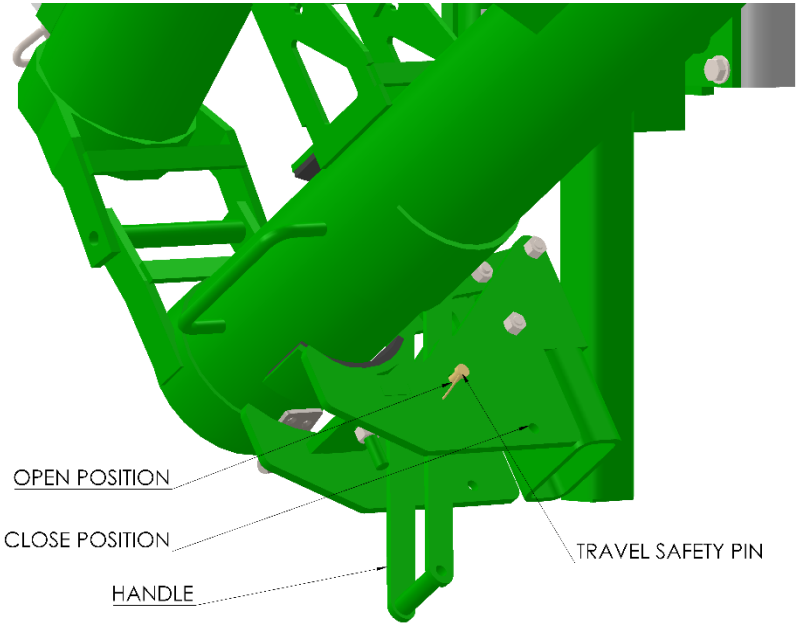
## AUGER OPERATING INSTRUCTIONS

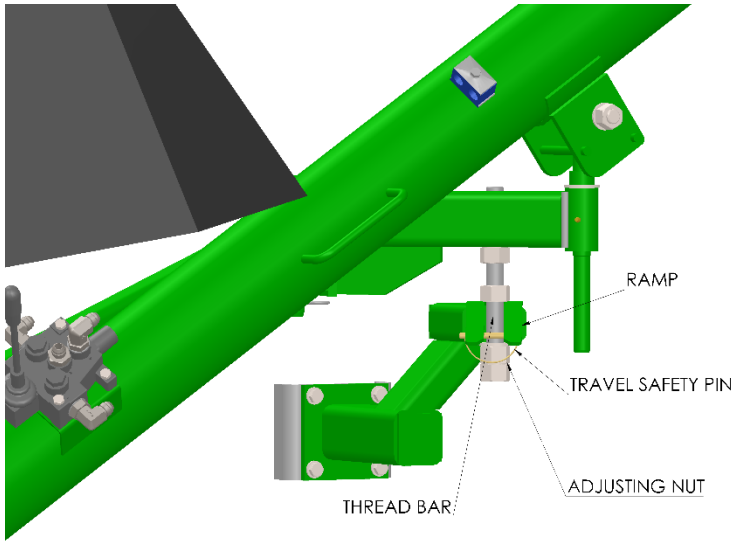
Air seeder 2400LT has the option of adding a 5.5" auger on the side of the machine to load and unload the two main tanks and grass-seed-box. Operate as follows:

**IT IS IMPORTANT TO KEEP HANDS, FEET OR CLOTHING FROM THE AUGER INTAKE, FOLDING SECTION OR DISCHARGE. SERIOUS INJURY CAN HAPPEN IF ANYTHING IS CAUGHT IN THE AUGER.**
**DO NOT RIDE ON THE AUGER AT ANY TIME.**
**HANDS OR FINGERS CAN BE CAUGHT IN THE MOVING PARTS OF AUGER AND ITS SUPPORT BRACKETS. USE HANDLES TO MANOEUVRE AUGER.**



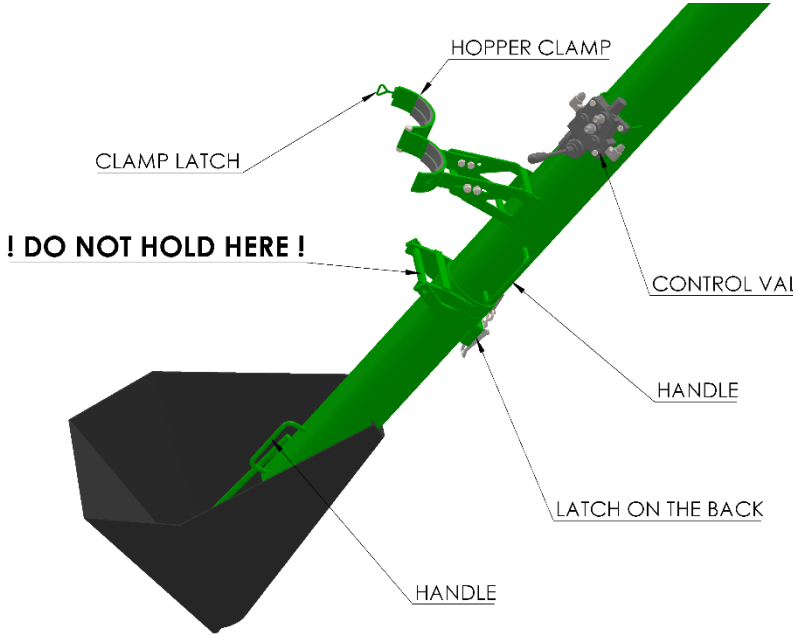

1. **Remove the two travel safety pins. Unlock the auger bypulling the handle to the open position.**



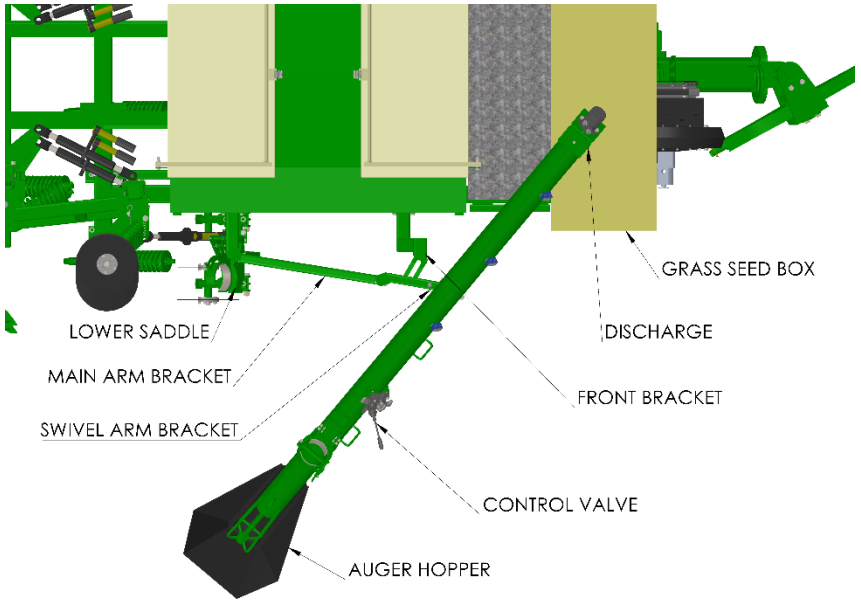



**2.** Loosen the adjusting nut. Lift and swing the back of the auger to clear the auger from the saddle. Pull the thread bar from the ramp. Swing the auger to a rough position. **MAKE SURE THE AUGER IS CLEAR TO SWING.**

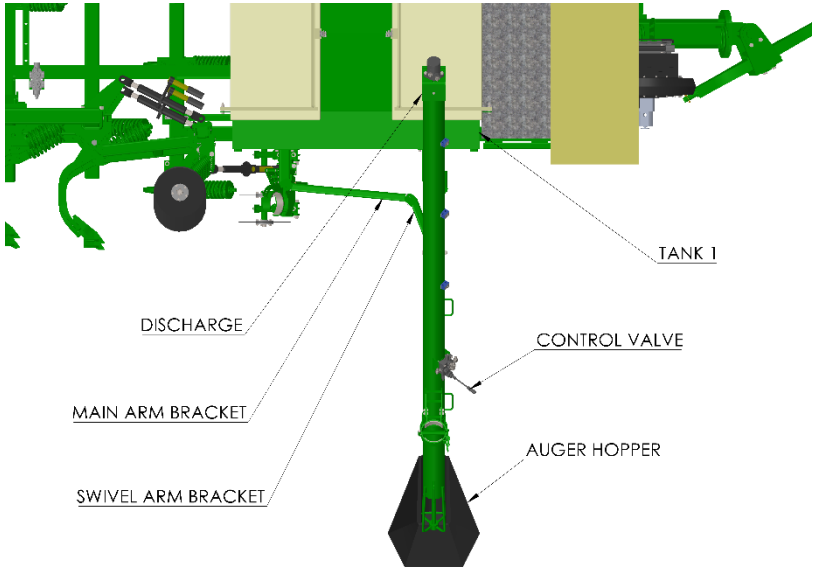
3. Open the clamp latch and unfold the lower part of the auger. Take care of the mass centre movement. The auger tends to drop when unfolding. Keep hands and fingers clear of moving parts.



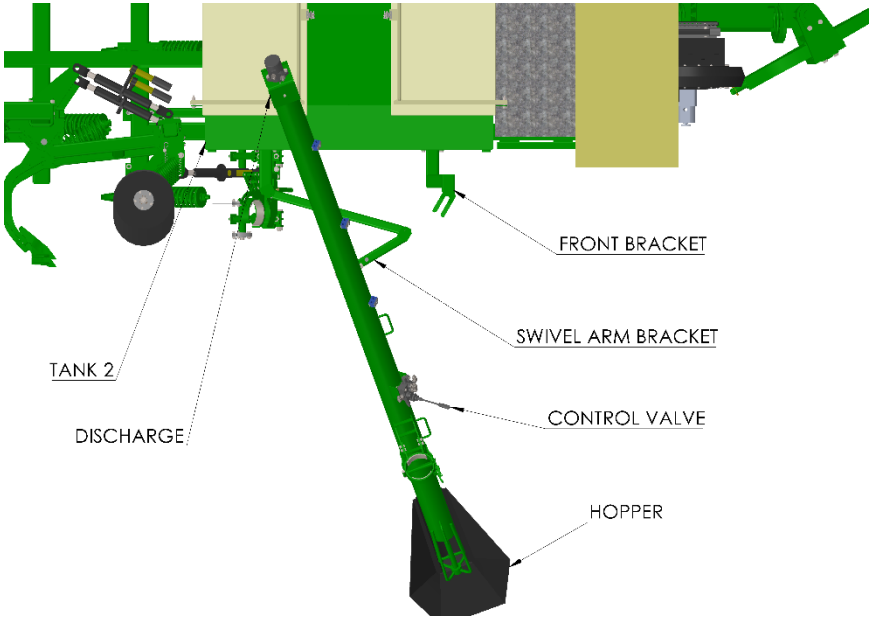

4. Lock the latch on the back of the auger and move the auger to the working position. Use the following positions as a guide.




Grass seed-box

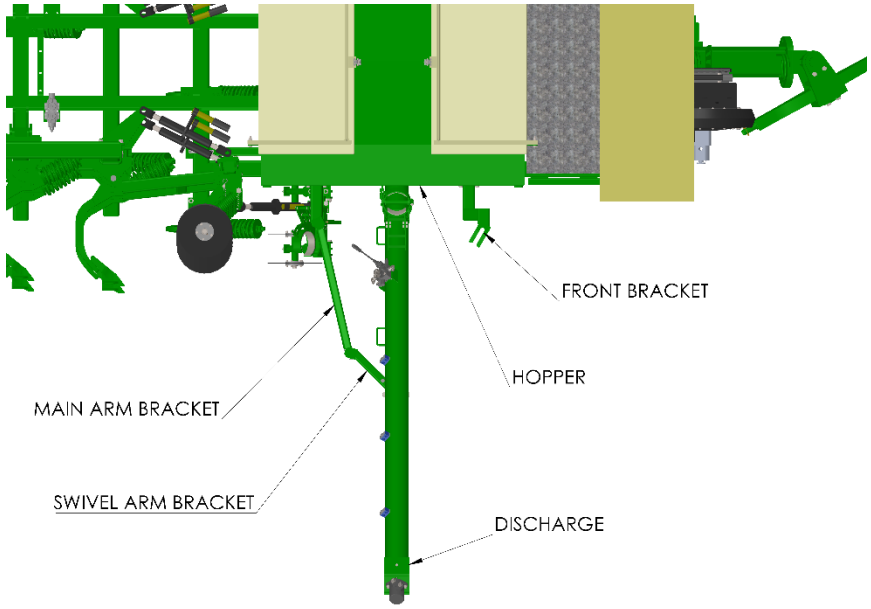



Hopper 1




Hopper 2

5. To unload the main tanks, keep swinging until into position. Use the following as a guide.




6. Push or pull the control valve to operate.

**Finish Using Auger**

7. After filling the air seeder tank, pull the control valve to empty the auger, entirely stop the auger, and empty the hopper

8. Fold the auger hopper part and lock it with the clamp. Then swing back to the transport position.

9. Fit the thread bar to the ramp top first. Lay the auger on the lower saddle, and close the saddle.

10. Turn the adjusting nut to lock the arm upside and downside. Lock the travel safety pins.

**To reach a better discharge angle, lowering the machine is recommended.**

**Blocking up the bottom of the auger hopper can help reduce the leftover in the hopper after discharge and can increase the discharge rate.**

# GRAIN & FERTILIZER CHART
# 6M AS2400It AIR DRILL

**The chart is based on speed 10 km/h**

QUANTITIES STATED ARE IN kg/hectare AND GUIDE ONLY
RATE VARIES DUE TO SPEED, SEED SIZE AND GATE SETTING
CHECK IN FIELD AND MUST DO CALIBRATION TEST

| GEAR SETTING | | | | | MIN SEED RATE | MAX SEED RATE | CAL FACT | GATE POSITION |
|---|---|---|---|---|---|---|---|---|
| | HOPPER | GEAR SET MOTOR | GEAR SET ROLLER | GEAR RATIO | kg/ha | kg/ha | kg/rev | |
| WHEAT 80kg/hl | FRONT | 10 | 33 | 1 : 3.3 | 1.25 | 24 | 0.172 | FINE |
| | | 33 | 10 | 3.3 : 1 | 14 | 262 | | |
| | REAR | 10 | 33 | 1 : 3.3 | 3.4 | 64 | 0.224 | |
| | | 33 | 10 | 3.3 : 1 | 37 | 701 | | |
| BARLEY 66kg/hl | FRONT | 10 | 33 | 1 : 3.3 | 1.4 | 26 | 0.089 | EX FINE |
| | | 33 | 10 | 3.3 : 1 | 15 | 287 | | |
| | REAR | 10 | 33 | 1 : 3.3 | 2.2 | 42 | 0.149 | |
| | | 33 | 10 | 3.3 : 1 | 24 | 463 | | |
| OATS 58kg/hl | FRONT | 10 | 33 | 1 : 3.3 | 1 | 19 | 0.063 | EX FINE |
| | | 33 | 10 | 3.3 : 1 | 11 | 206 | | |
| | REAR | 10 | 33 | 1 : 3.3 | 1.5 | 29 | 0.096 | |
| | | 33 | 10 | 3.3 : 1 | 17 | 317 | | |
| CANOLA 68kg/hl | FRONT | 10 | 33 | 1 : 3.3 | 1.25 | 24 | 0.083 | EX FINE |
| | | 33 | 10 | 3.3 : 1 | 14 | 262 | | |
| | REAR | 10 | 33 | 1 : 3.3 | 1.85 | 35 | 0.122 | |
| | | 33 | 10 | 3.3 : 1 | 20 | 386 | | |
| LUPINS 80kg/hl | FRONT | 10 | 33 | 1 : 3.3 | 5.1 | 97 | 0.347 | NORMAL |
| | | 33 | 10 | 3.3 : 1 | 55 | 1056 | | |
| | REAR | 10 | 33 | 1 : 3.3 | 6.8 | 131 | 0.459 | |
| | | 33 | 10 | 3.3 : 1 | 74 | 1428 | | |
| FABA BEAN 56kg/hl | FRONT | 10 | 33 | 1 : 3.3 | 4.4 | 85 | 0.31 | COARSE |
| | | 33 | 10 | 3.3 : 1 | 48 | 928 | | |
| | REAR | 10 | 33 | 1 : 3.3 | 7 | 134 | 0.488 | |
| | | 33 | 10 | 3.3 : 1 | 76 | 1457 | | |
| LUCERNE 85kg/hl | FRONT | 10 | 33 | 1 : 3.3 | 2 | 38 | 0.132 | EX FINE |
| | | 33 | 10 | 3.3 : 1 | 22 | 418 | | |
| | REAR | 10 | 33 | 1 : 3.3 | 2.6 | 50 | 0.172 | |
| | | 33 | 10 | 3.3 : 1 | 29 | 549 | | |
| GRAN SUPER 118kg/hl | FRONT | 10 | 33 | 1 : 3.3 | 4 | 77 | 0.271 | FINE |
| | | 33 | 10 | 3.3 : 1 | 43 | 834 | | |
| | REAR | 10 | 33 | 1 : 3.3 | 5.5 | 105 | 0.356 | |
| | | 33 | 10 | 3.3 : 1 | 60 | 1143 | | |
| D.A.P. 100kg/hl | REAR | 10 | 33 | 1 : 3.3 | 3.5 | 42.4 | 0.057 | FINE |
| | | 33 | 10 | 3.3 : 1 | 37.8 | 461.6 | 0.617 | |
| UREA 82kg/hl | REAR | 10 | 33 | 1 : 3.3 | 3.3 | 40.4 | 0.054 | FINE |
| | | 33 | 10 | 3.3 : 1 | 36 | 439.9 | 0.588 | |

vers similar VOLUME of all materials.
ec vary in proportion to density (kg/hl)
ed materials may be estimated as follows:

$$\text{Rate for wheat} \times \frac{\text{kg/hl (for material)}}{\text{0.8 (kg/hl for wheat)}}$$

**CAL FACTOR ARE REQUIRED TO BE DIVIDED BY 3.3 WHEN PUT IN THE ATERMIS CONSOLE**
**CAL FACTOR VARIOUS WITH SEEDS AND CONDITIONS**
**AFTER SETTING ALWAYS TAKE A RATE TEST**

NOTES

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# 6M AS2400lt AIR DRILL

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|---|---|---|---|---|---|---|---|---|
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| | REAR | 10 | 33 | 1 : 3.3 | 2.2 | 42 | 0.149 | |
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| | | 33 | 10 | 3.3 : 1 | 20 | 386 | | |
| LUPINS 80kg/hl | FRONT | 10 | 33 | 1 : 3.3 | 5.1 | 97 | 0.347 | NORMAL |
| | | 33 | 10 | 3.3 : 1 | 55 | 1056 | | |
| | REAR | 10 | 33 | 1 : 3.3 | 6.8 | 131 | 0.459 | |
| | | 33 | 10 | 3.3 : 1 | 74 | 1428 | | |
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| | | 33 | 10 | 3.3 : 1 | 48 | 928 | | |
| | REAR | 10 | 33 | 1 : 3.3 | 7 | 134 | 0.488 | |
| | | 33 | 10 | 3.3 : 1 | 76 | 1457 | | |
| LUCERNE 85kg/hl | FRONT | 10 | 33 | 1 : 3.3 | 2 | 38 | 0.132 | EX FINE |
| | | 33 | 10 | 3.3 : 1 | 22 | 418 | | |
| | REAR | 10 | 33 | 1 : 3.3 | 2.6 | 50 | 0.172 | |
| | | 33 | 10 | 3.3 : 1 | 29 | 549 | | |
| GRAN SUPER 118kg/hl | FRONT | 10 | 33 | 1 : 3.3 | 4 | 77 | 0.271 | FINE |
| | | 33 | 10 | 3.3 : 1 | 43 | 834 | | |
| | REAR | 10 | 33 | 1 : 3.3 | 5.5 | 105 | 0.356 | |
| | | 33 | 10 | 3.3 : 1 | 60 | 1143 | | |
| D.A.P. 100kg/hl | REAR | 10 | 33 | 1 : 3.3 | 3.5 | 42.4 | 0.057 | FINE |
| | | 33 | 10 | 3.3 : 1 | 37.8 | 461.6 | 0.617 | |
| UREA 82kg/hl | REAR | 10 | 33 | 1 : 3.3 | 3.3 | 40.4 | 0.054 | FINE |
| | | 33 | 10 | 3.3 : 1 | 36 | 439.9 | 0.588 | |

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**WHEN PUT IN THE ATERMIS CONSOLE**
**CAL FACTOR VARIOUS WITH SEEDS AND CONDITIONS**
**AFTER SETTING ALWAYS TAKE A RATE TEST**

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# 6M AS2400It AIR DRILL

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| | REAR | 10 | 33 | 1 : 3.3 | 2.2 | 42 | 0.149 | |
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| | REAR | 10 | 33 | 1 : 3.3 | 6.8 | 131 | 0.459 | |
| | | 33 | 10 | 3.3 : 1 | 74 | 1428 | | |
| FABA BEAN 56kg/hl | FRONT | 10 | 33 | 1 : 3.3 | 4.4 | 85 | 0.31 | COARSE |
| | | 33 | 10 | 3.3 : 1 | 48 | 928 | | |
| | REAR | 10 | 33 | 1 : 3.3 | 7 | 134 | 0.488 | |
| | | 33 | 10 | 3.3 : 1 | 76 | 1457 | | |
| LUCERNE 85kg/hl | FRONT | 10 | 33 | 1 : 3.3 | 2 | 38 | 0.132 | EX FINE |
| | | 33 | 10 | 3.3 : 1 | 22 | 418 | | |
| | REAR | 10 | 33 | 1 : 3.3 | 2.6 | 50 | 0.172 | |
| | | 33 | 10 | 3.3 : 1 | 29 | 549 | | |
| GRAN SUPER 118kg/hl | FRONT | 10 | 33 | 1 : 3.3 | 4 | 77 | 0.271 | FINE |
| | | 33 | 10 | 3.3 : 1 | 43 | 834 | | |
| | REAR | 10 | 33 | 1 : 3.3 | 5.5 | 105 | 0.356 | |
| | | 33 | 10 | 3.3 : 1 | 60 | 1143 | | |
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NOTES

# GRAIN & FERTILIZER CHART
# 6M AS2400It AIR DRILL

**The chart is based on speed 10 km/h**

QUANTITIES STATED ARE IN kg/hectare AND GUIDE ONLY
RATE VARIES DUE TO SPEED, SEED SIZE AND GATE SETTING
CHECK IN FIELD AND MUST DO CALIBRATION TEST

| GEAR SETTING | | | | | MIN SEED RATE | MAX SEED RATE | CAL FACT | GATE POSITION |
|---|---|---|---|---|---|---|---|---|
| | HOPPER | GEAR SET MOTOR | GEAR SET ROLLER | GEAR RATIO | kg/ha | kg/ha | kg/rev | |
| WHEAT 80kg/hl | FRONT | 10 | 33 | 1 : 3.3 | 1.25 | 24 | 0.172 | FINE |
| | | 33 | 10 | 3.3 : 1 | 14 | 262 | | |
| | REAR | 10 | 33 | 1 : 3.3 | 3.4 | 64 | 0.224 | |
| | | 33 | 10 | 3.3 : 1 | 37 | 701 | | |
| BARLEY 66kg/hl | FRONT | 10 | 33 | 1 : 3.3 | 1.4 | 26 | 0.089 | EX FINE |
| | | 33 | 10 | 3.3 : 1 | 15 | 287 | | |
| | REAR | 10 | 33 | 1 : 3.3 | 2.2 | 42 | 0.149 | |
| | | 33 | 10 | 3.3 : 1 | 24 | 463 | | |
| OATS 58kg/hl | FRONT | 10 | 33 | 1 : 3.3 | 1 | 19 | 0.063 | EX FINE |
| | | 33 | 10 | 3.3 : 1 | 11 | 206 | | |
| | REAR | 10 | 33 | 1 : 3.3 | 1.5 | 29 | 0.096 | |
| | | 33 | 10 | 3.3 : 1 | 17 | 317 | | |
| CANOLA 68kg/hl | FRONT | 10 | 33 | 1 : 3.3 | 1.25 | 24 | 0.083 | EX FINE |
| | | 33 | 10 | 3.3 : 1 | 14 | 262 | | |
| | REAR | 10 | 33 | 1 : 3.3 | 1.85 | 35 | 0.122 | |
| | | 33 | 10 | 3.3 : 1 | 20 | 386 | | |
| LUPINS 80kg/hl | FRONT | 10 | 33 | 1 : 3.3 | 5.1 | 97 | 0.347 | NORMAL |
| | | 33 | 10 | 3.3 : 1 | 55 | 1056 | | |
| | REAR | 10 | 33 | 1 : 3.3 | 6.8 | 131 | 0.459 | |
| | | 33 | 10 | 3.3 : 1 | 74 | 1428 | | |
| FABA BEAN 56kg/hl | FRONT | 10 | 33 | 1 : 3.3 | 4.4 | 85 | 0.31 | COARSE |
| | | 33 | 10 | 3.3 : 1 | 48 | 928 | | |
| | REAR | 10 | 33 | 1 : 3.3 | 7 | 134 | 0.488 | |
| | | 33 | 10 | 3.3 : 1 | 76 | 1457 | | |
| LUCERNE 85kg/hl | FRONT | 10 | 33 | 1 : 3.3 | 2 | 38 | 0.132 | EX FINE |
| | | 33 | 10 | 3.3 : 1 | 22 | 418 | | |
| | REAR | 10 | 33 | 1 : 3.3 | 2.6 | 50 | 0.172 | |
| | | 33 | 10 | 3.3 : 1 | 29 | 549 | | |
| GRAN SUPER 118kg/hl | FRONT | 10 | 33 | 1 : 3.3 | 4 | 77 | 0.271 | FINE |
| | | 33 | 10 | 3.3 : 1 | 43 | 834 | | |
| | REAR | 10 | 33 | 1 : 3.3 | 5.5 | 105 | 0.356 | |
| | | 33 | 10 | 3.3 : 1 | 60 | 1143 | | |
| D.A.P. 100kg/hl | REAR | 10 | 33 | 1 : 3.3 | 3.5 | 42.4 | 0.057 | FINE |
| | | 33 | 10 | 3.3 : 1 | 37.8 | 461.6 | 0.617 | |
| UREA 82kg/hl | REAR | 10 | 33 | 1 : 3.3 | 3.3 | 40.4 | 0.054 | FINE |
| | | 33 | 10 | 3.3 : 1 | 36 | 439.9 | 0.588 | |

vers similar VOLUME of all materials.
ec vary in proportion to density (kg/hl)
ed materials may be estimated as follows:

$$\text{Rate for wheat} \times \frac{\text{kg/hl (for material)}}{\text{0.8 (kg/hl for wheat)}}$$

**CAL FACTOR ARE REQUIRED TO BE DIVIDED BY 3.3 WHEN PUT IN THE ATERMIS CONSOLE**
**CAL FACTOR VARIOUS WITH SEEDS AND CONDITIONS**
**AFTER SETTING ALWAYS TAKE A RATE TEST**

NOTES

# TROUBLESHOOTING of HYDRAULIC PHASING LIFTING CYLINDERS

The three cylinders on one side are connected in series, such that each moves together to provide a level lift of the implement.

When the implement is RAISED, oil delivered from the tractor is directed to the piston end of the master cylinder, oil from the rod end flows to the piston end of the wheel cylinder, and oil from the rod end flows to the piston end of the wing cylinders. The oil from the rod end flows back to the tractor. The volumes of the cylinders are matched so that both cylinders extend and retract simultaneously.

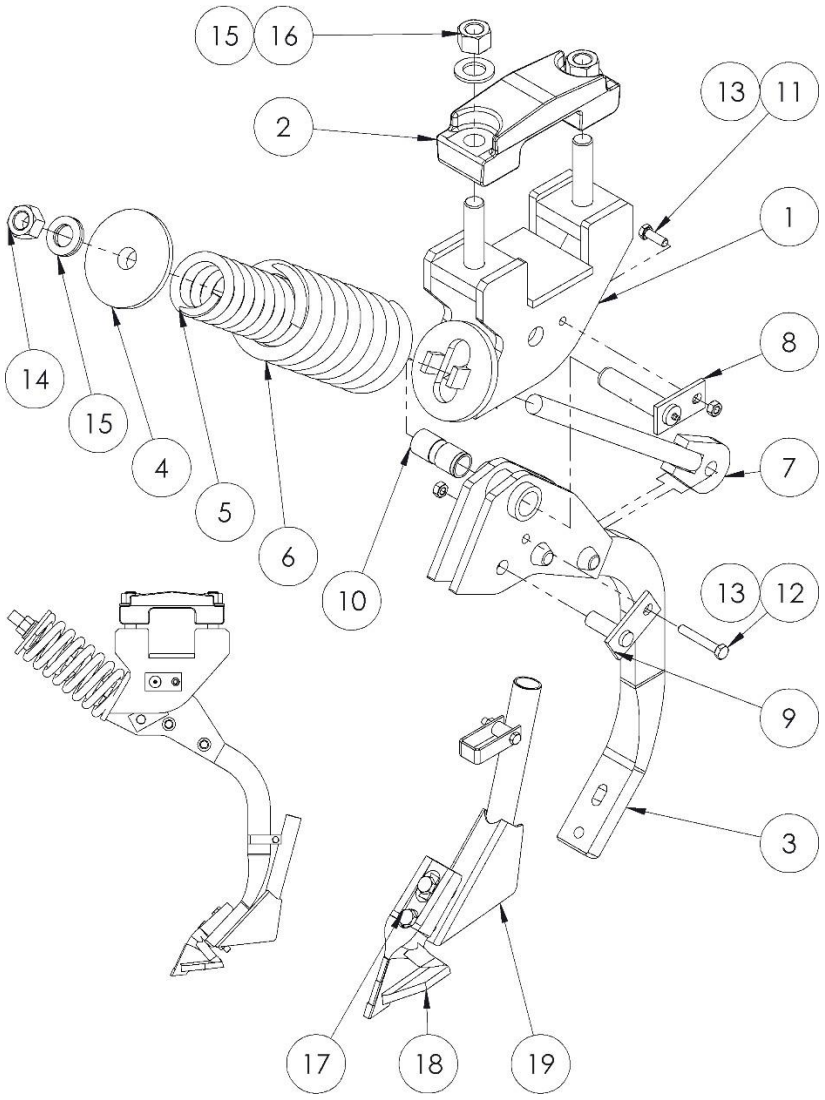
To ensure that all cylinders begin work "in phase", each cylinder has a "phasing bypass" hole in the barrel that allows a small volume of oil to pass across the piston when the cylinder is fully extended (implement fully raised).

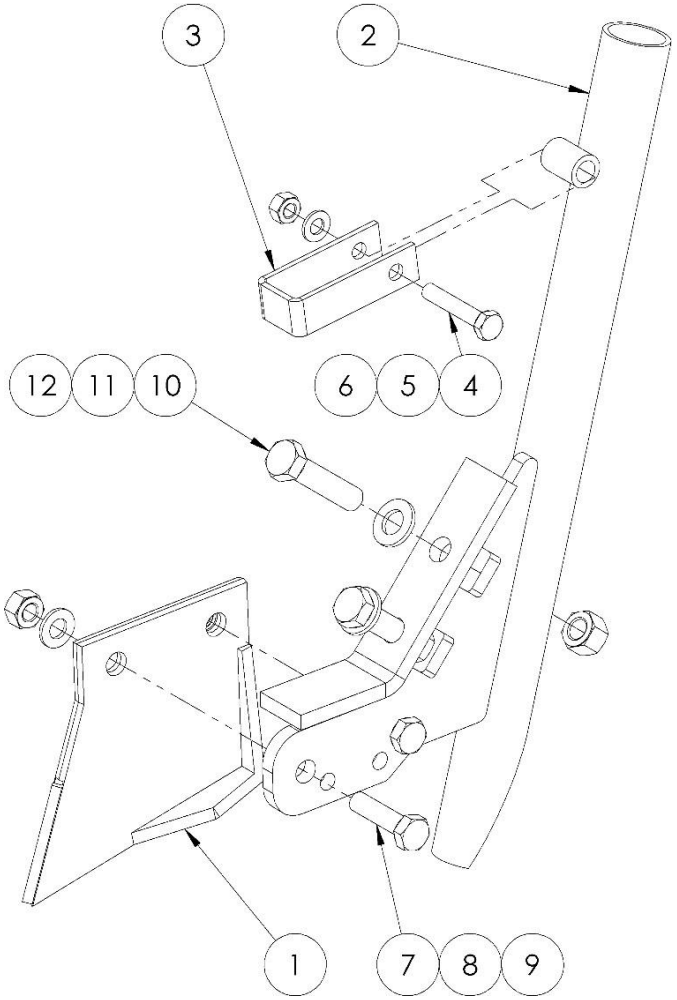
To achieve levelling of the implement (initially, or after storage, or as a result of one cylinder having an imperfect piston seal), the implement should be:
- Fully raised,
- The tractor control valve be held in the raised position with the tractor at idle (it may require holding the valve for several minutes to purge the system thoroughly),
- All cylinders are viewed separately to ensure that they have reached full extension (cylinder travel has ceased),
- The tractor valve is then released, and the implementation can be lowered, levelled with the levelling screw assembly on the hitch, or transported, as required.

Should a leaking piston seal be suspected, identify the cylinder by:
- Phasing the implementation as above,
- Lower implement slightly, but with tynes still clear of the ground,
- Close the needle valve to ensure no flow back to the tractor,
- Measure the shiny rod extending from each of the cylinders,
- Leave the implement stand long enough to be able to measure any change in the dimensions measured (overnight and not in direct sunshine is preferable).

The first cylinder in the series that has "dropped" is at fault. If only one has "dropped", it is at fault. If all have "dropped", the "master cylinder" is at fault

This, of course, assumes no external leakages from any of the cylinders or their connecting plumbing.

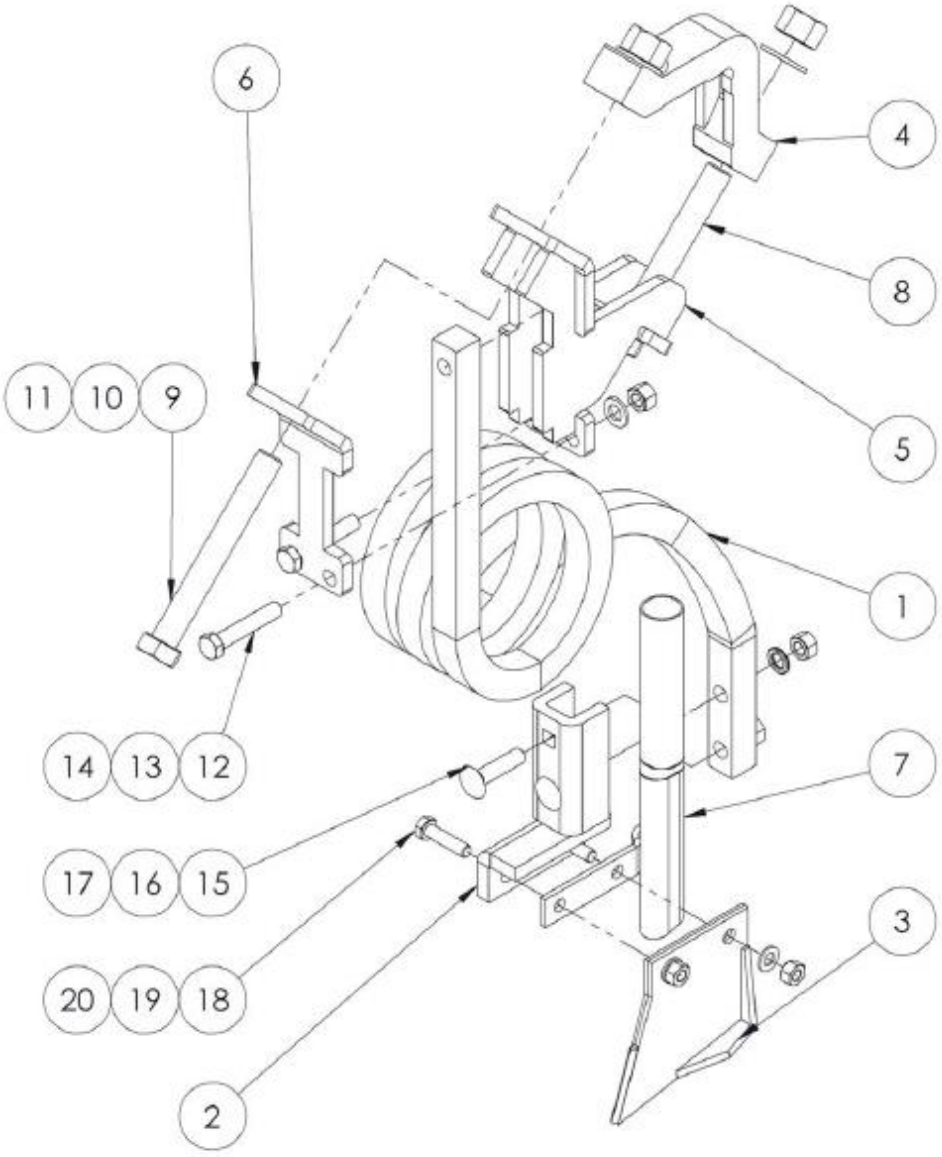



48419 KIT

630 TYNE ASSEMBLY

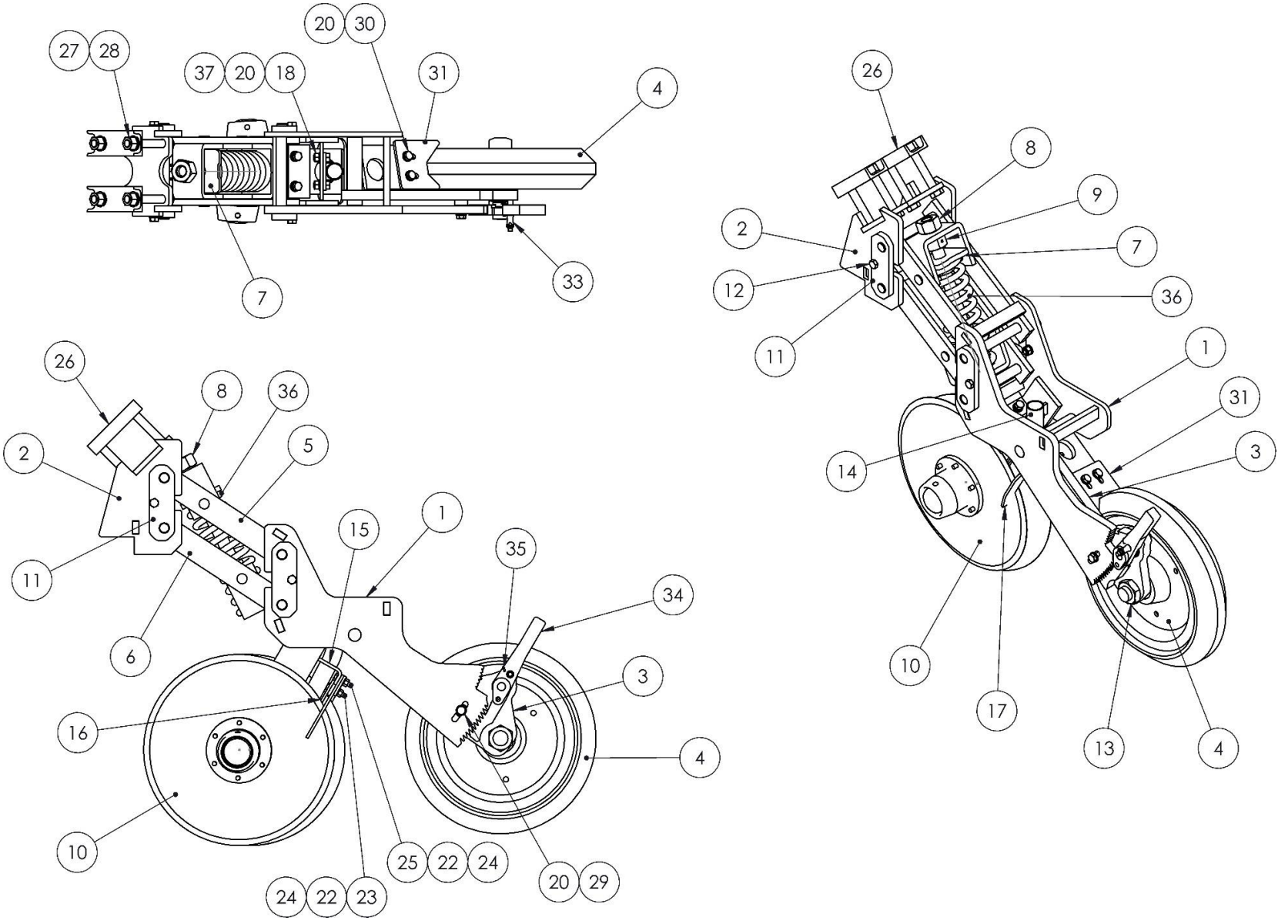
| ITEM | PART No | DESCRIPTION | | ITEM | PART No | DESCRIPTION |
|---|---|---|---|---|---|---|
| 1 | 45672 | CARRIER ASM | 630 FLAT | 1 | | |
| 2 | 48358 | CLAMP | 630 CAST | 1 | | |
| 3 | 44147 | TYNE ASM | 630T | 1 | | |
| 4 | 42924 | CUP | SPRING TOP | 1 | | |
| 5 | 37384 | SPRING | TYNE 12MM | 1 | | |
| 6 | 37385 | SPRING | TYNE 17MM | 1 | | |
| 7 | 44138 | ROD ASSY. | SPRING | 1 | | |
| 8 | 37125 | PIN ASSY. | PIVOT | 1 | | |
| 9 | 42939 | PIN ASSY. | SPRING ROD | 1 | | |
| 10 | 42933 | BUSH | TYNE | 1 | | |
| 11 | 18824 | BOLT | M10 X 30 ZP | 1 | | |
| 12 | 19046 | BOLT | M10 X 65 ZP | 1 | | |
| 13 | 17777J1 | NUT | M10 | 2 | | |
| 14 | 18042 | NUT | M24 | 1 | | |
| 15 | FBW11 | WASHER | M24 FLAT | 4 | | |
| 16 | 24167 | NUT | M24 NYLOC | 2 | | |
| 17 | 49610 | POINT KIT | SUPPER SEEDER | 1 | | |
| | | | ITEMS 18-20 STANDARD | | | |
| 18 | 44126 | POINT | SUPPER SEEDER | 1 | | |
| 19 | 42940 | BOOT ASSY. | 630 TYNE | 1 | | |
| 20 | 44963 | BOLT& NUT KIT | 1/2” X 3” PLOUGH | 2 | | |
| | 48419 | POINT KIT | BAKER BOOT | 1 | | |
| | | | ITEM BELOW, REPLACE ITEM 17 | | | |
| 1 | 989-881 | POINT | BAKER BOOT | 1 | | |
| 2 | 48420 | BOOT ASSY. | BAKER 630T | 1 | | |
| 3 | 42942 | CLIP | SHANK | 1 | | |
| 4 | 44381 | BOLT | HEX M8 X 45 GR8.8 | 1 | | |
| 5 | FBW3 | WASHER | M8 FLAT | 1 | | |
| 6 | 34095 | NUT | M8 NYLOC | 1 | | |
| 7 | 48415 | BOLT | HEX M10 X 40 GR8.8 | 2 | | |
| 8 | FBW4 | WASHER | M10 FLAT | 2 | | |
| 9 | 31993 | NUT | M10 NYLOC | 2 | | |
| 10 | 36893 | BOLT | HEX M12 X 50 GR8.8 | 2 | | |
| 11 | FBW6 | WASHER | M12 FLAT | 2 | | |
| 12 | 38533 | NUT | M12 NYLOC | 2 | | |




## COIL TYNE ASSEMBLY 46827 & 46828

| ITEM | PART No | DESCRIPTION | | QTY |
|---|---|---|---|---|
| 1 | 23675 | COIL TYNE VERT | RH | 1 |
| | 23674 | COIL TYNE VERT | LH | 1 |
| 2 | 48056 | BRACKET | BAKER BOOT | 1 |
| 3 | 989-881 | POINT | BAKER BOOT | 1 |
| 4 | 19635 | CLAMP | TYNE CAST | 1 |
| 5 | 48290 | CLAMP ASSY. | COIL TYNE | 1 |
| 6 | 48524 | PLATE | CLAMP | 1 |
| 7 | 48615 | DOWN TUBE ASSY. | COIL FRONT | 1 |
| | 48614 | DOWN TUBE ASSY. | COIL REAR | 1 |
| 8 | 18124 | BOLT | M20 X 140 8.8 ZP | 1 |
| 9 | 46915 | BOLT | M20 X 160 8.8 ZP | 1 |
| 10 | FBW9 | WASHER | M20 FLAT | 2 |
| 11 | 22026 | NUT | M20 NYLOC | 2 |
| 12 | 22998 | BOLT | M12 X 25 | 2 |
| 13 | FBW6 | WASHER | M12 FLAT | 2 |
| 14 | 38533 | NUT | M12 NYLOC | 2 |
| 15 | 942-726 | BOLT CUP/HD | M12 X 50 | 2 |
| 16 | 17616J1 | WASHER | M12 SPRING | 2 |
| 17 | 18414 | NUT | M12 | 2 |
| 18 | 48415 | BOLT | M10 X 40 | 2 |
| 19 | FBW4 | WASHER | M10 FLAT | 2 |
| 20 | 31993 | NUT | M10 NYLOC | 2 |

## DOUBLE DISC OPENER ASSEMBLY - SPRING



## DOUBLE DISC OPENER ASSEMBLY – SPRING (D.D.O. Drill)

| ITEM | PART No | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | 43021 | WHEEL BRACKET ASSEMBLY | 1 |
| 2 | 43271A | BEAM BRACKET ASSEMBLY - DIAMOND | 1 |
| | 43271B | BEAM BRACKET ASSEMBLY - SQUARE | 1 |
| 3 | 43047 | WHEEL ARM ASSEMBLY | 1 |
| 4 | 43051 | PRESS WHEEL ASSEMBLY | 1 |
| 5 | 43013 | ARM ASSY, UPPER | 1 |
| 6 | 43068 | ARM ASSY, LOWER | 1 |
| 7 | 43023 | UPPER SEAT ASSY | 1 |
| 8 | 43046 | BOLT, TENSION | 1 |
| 9 | 43274 | NUT, DRILLED - M24 | 1 |
| 10 | 43272 | DISC/HUB ASSEMBLY - PLAIN | 2 |
| | 43273 | DISC/HUB ASSEMBLY - SCALLOPED | 2 |
| 11 | 43024 | PLATE, KEEPER | 4 |
| 12 | 20679 | AS 1111.2 - M10 x 35-NN | 4 |
| 13 | 17261J1 | AS 1112.4 AB- M30-N | 1 |
| 14 | 43669 | SEED TUBE ASSEMBLY | 1 |
| 15 | 43661 | SCRAPER FRAME | 1 |
| 16 | 44432 | SCRAPER, INTERNAL | 1 |
| 17 | 44431A | SCRAPER, EXTERNAL | 2 |
| 18 | 31993 | AS 1112.2 S2- M10-W-N NYLOC | 6 |
| 19 | 18613 | HEX, BOLT - M10 x 20 | 2 |
| 20 | FBW4 | AS 1237.1 N - 10 | 11 |
| 21 | 17776J1 | WASHER, SPRING M10 | 2 |
| 22 | 34095 | AS 1112.2 S2- M8-DC NYLOC | 4 |
| 23 | | AS-NZS 1390 S - M8 x 40-N Cup Head | 2 |
| 24 | FBW3 | AS 1237.1 N - 8 | 4 |
| 25 | 18437 | AS 1110.2 - M8 x 35 -C | 2 |
| 26 | 43326 | CLAMP | 2 |
| 27 | FBW8 | WASHER, FLAT M16 | 4 |
| 28 | 28912 | NUT, HEX - M16 NYLOC | 4 |
| 29 | 24214 | AS 1110.1 - M10 x 50-N | 1 |
| 30 | 20800 | AS 1110.2 - M10 x 30 -C | 2 |
| 31 | 43315 | SCRAPER, PRESS WHEEL | 1 |
| 32 | 43929 | PLATE, MOUNT | 1 |
| 33 | 45307 | PIN, BALL LOCK (PURCH) | 1 |
| 34 | 45306 | ARM | 1 |
| 35 | 45312 | SPRING | 1 |

| ITEM | PART No | DESCRIPTION | QTY |
|---|---|---|---|
| 36 | 37384 | SPRING, 12mm | 1 |
| 37 | 18520 | HEX, BOLT - M10 x 25 | 2 |

| PART No | DESCRIPTION |
|---|---|
| | **DOUBLE DISC OPENER COMPLETE ASSEMBLIES** |
| 43065 | Spring, Diamond Mount, Plain Disc, Single Shoot. |
| 43132 | Spring, Square Mount, Plain Disc, Single Shoot |
| 43133 | Spring, Diamond Mount, Plain/Scalloped Disc, Single Shoot. |
| 43134 | Spring, Square Mount, Plain/Scalloped Disc, Single Shoot. |

Torque: 17Nm with Loctite

Allow 1-2mm gap to disc/s

Allow 1-2mm gap to disc/s

Torque: 8.5Nm with Loctite (note: do not tighten with item 32)

Torque: 8.5Nm with Loctite

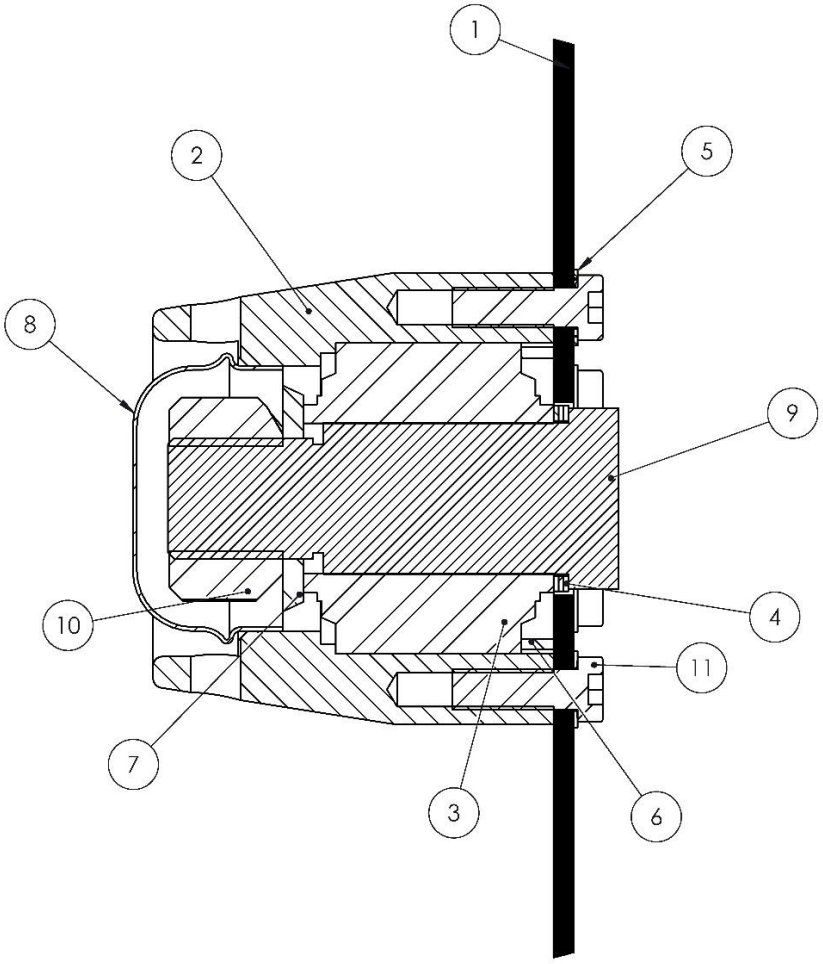
Torque: 8.5Nm with Loctite

Do Not Tighten - allow 1mm gap

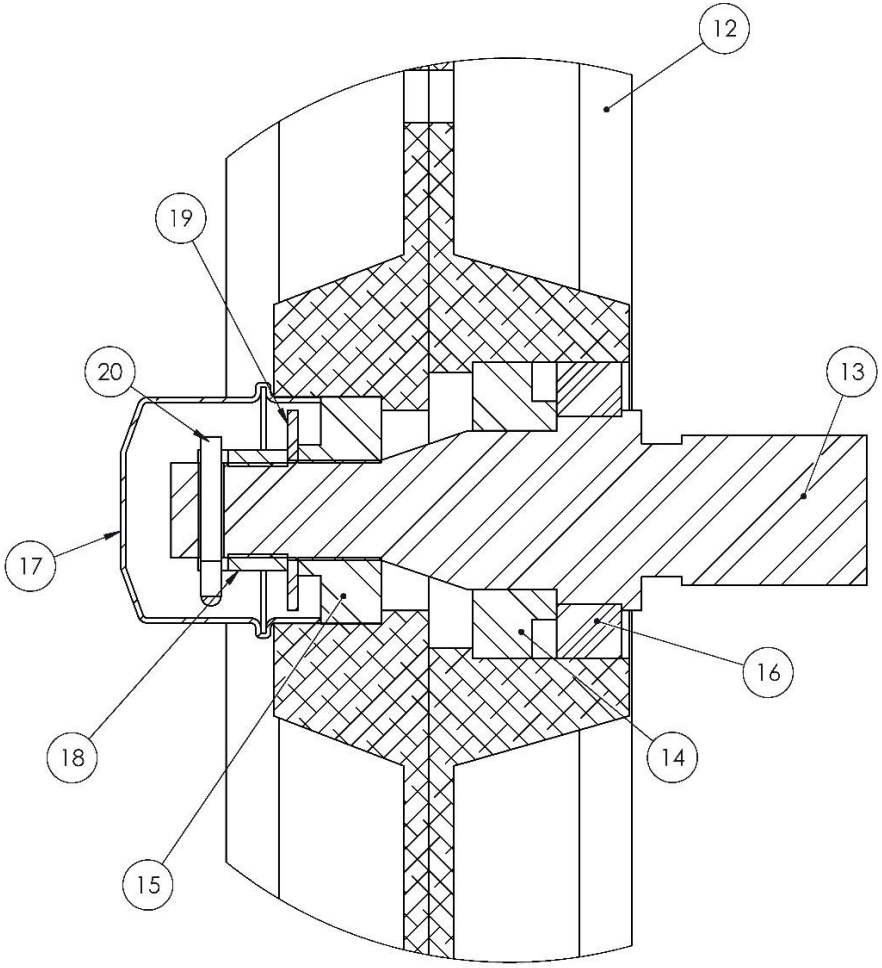
Torque: 17Nm with Loctite

Torque: 17Nm with Loctite

**DOUBLE DISC OPENER - DETAIL SECTION VIEWS**




DISC/HUB ASSEMBLY
SECTION VIEW




PRESS WHEEL ASSEMBLY
SECTION VIEW

**DOUBLE DISC OPENER - DETAIL SECTION VIEWS**

| ITEM | PART No | DESCRIPTION | QTY | NOTES |
|---|---|---|---|---|
| 1 | 45043 | DISC, PLAIN 15" x 5mm | 1 | |
| | 45044 | DISC, SCALLOPED 15" x 5mm | 1 | |
| 2 | 46551 | HUB, DISC | 1 | |
| 3 | 43026 | BEARING, DOUBLE RACE | 1 | |
| 4 | 43030 | SHIM | 3 | 3 per disc (or as required to achieve a 0.1-0.5mm disc gap) |
| 5 | 43028 | RING, SPACER | 1 | |
| 6 | 18935 | WASHER - STUB AXLE | 1 | |
| 7 | 10100N | CAP, DUST 52.9mm WHEEL HUB | 1 | |
| 8 | 43014 | AXLE, STUB - DISC | 1 | |
| 9 | 936-708 | NUT, CONELOCK M24 | 1 | |
| 10 | 44995 | M8 x 30 CSK | 6 | Torque: 30-35Nm with Loctite on thread |
| 11 | 18464 | NUT, HEX - M8 | 6 | |
| 12 | 18465 | WASHER, SPRING M8 | 6 | |
| 13 | 43060 | WHEEL/TYRE ASSEMBLY | 1 | Replacement Tyre P/N: 43327 |
| 14 | 43050 | AXLE, STUB | 1 | |
| 15 | SR552 | BEARING | 1 | |
| 16 | 43052 | BEARING | 1 | |
| 17 | 43053 | SEAL, TRIPLE LIP | 1 | |
| 18 | 43057 | CAP, DUST | 1 | |
| 19 | 43058 | NUT, CASTLE | 1 | |
| 20 | 43059 | WASHER | 1 | |
| 21 | 16859J1 | PIN, COTTER 4x32 | 1 | |
| | 43272 | DISC HUB ASSEMBLY - PLAIN<br>(ITEMS 1-11, NOTE: ITEM 1 43034) | | |
| | 43273 | DISC HUB ASSEMBLY - SCALLOPED<br>(ITEMS 1-11, NOTE: ITEM 1 43147) | | |
| | 43051 | PRESS WHEEL ASSEMBLY<br>(ITEMS 12-20) | | |

## GENERAL TROUBLESHOOTING

| PROBLEM | CAUSE | REMEDY |
|---|---|---|
| DISTRIBUTOR ROLLERS WILL NOT TURN | The seed rate can be too low<br>Tractor speed too low<br><br>Motor burned | Increase the rate to the chart on page 27<br>Operate tractor faster when seed rate is low<br>Check and replace |
| OPERATION RATE (REALITY) HIGHER THAN DISPLAY | Some seeds may be trapped in pipes during calibration, reducing the amount on the scale | Calibrate multiple times to reduce the effect<br>Add a certain per cent weight on the tablet after calibration when working with a small amount |
| FERTILISER RATE VARIES | Fertiliser build-up on distributors | Clean distributor rollers |
| SOWING DEPTH DIFFERS FROM ONE SIDE OF THE MACHINE TO THE OTHER | Ram lug assembly not adjusted properly<br><br>Hydraulic cylinders out of phase (if trailing hitch kit fitted) | Check ram lug assembly and adjust if necessary<br><br>Re-phase cylinders (see page 35) |
| DISTRIBUTOR ROLLERS DAMAGE SEED | Gate positions are set too close<br><br>Roller turning in the wrong direction | Re-adjust gate settings<br><br>Check roller turning direction |
| IMPLEMENT KEEPS DROPPING SEED AND FERTILISER WHEN IN THE TRANSPORT POSITION | Gate settings too wide<br><br>Gate settings in cleaning out position | Re-adjust gates to the recommended setting |
| NOT ENOUGH FLOW FOR GSB | Too much flow goes to the primary hopper<br><br>Not enough flow rate | Close two gates more on the blower manifold to lead more flow to GSB<br>Increase flow rate on tractor or open fan flow rate valve more |