

OPERATORS MANUAL



3.0 METRE MOUNTED MODEL

MOORE UNIDRILL 300G, August 2016, Serial No. 8314 and onwards



MOORE UNIDRILL (MANUFACTURING) LTD

RANDALLS FARM, SCOTTLETHORPE ROAD, EDENHAM, BOURNE, Lincs, PE10 0LN

Foreword

Please read and observe these instructions very carefully before you proceed to operate the seed drill. This way you will avoid accidents, reduce repair costs and downtime, and increase the reliability and service life of your seed drill. Pay particular attention to the safety instructions. Moore Unidrill Manufacturing Ltd cannot assume any liability for damage or malfunctions caused by a failure to observe the instructions contained in this operating manual.

The purpose of this operating manual is to enable you to familiarize yourself with the working of your seed drill and to make full use of the many possibilities of application which it affords. The manual will first explain the seed drill in general and then proceed to describe the special features of the different models.

The terms "right", "left", "front" and "back" are used here for when sitting in the tractor seat looking forward. This operating manual must be read and used by all persons who are required to carry out work either on or with the seed drill, e.g., Operation, Maintenance, Transporting.

On our website www.moore-unidrill.com you will find a link to a "Warranty Registration Form". Once you have familiarised yourself with this operation manual, please complete the registration form via our website. This will confirm your acquisition of the seed drill. The period of guarantee commences on the date of delivery.

Moore Unidrill Manufacturing Ltd reserve the right to make changes to the illustrations and data on specifications and weights contained in this operating manual if we make any improvements to the seed drills.

Seed drill identification

Once you have accepted delivery of the seed drill, please enter the following data:

Serial No:

Seed drill model:

Working width:

Number of coulters:

Accessories:

Date of issue of Operators Manual: April 2022

Contents

Guarantee Guidelines	4
Safety instructions	4
Proper Use	5
Operational Safety	6
No liability for consequential damage	6
Road Safety	7
Accident Prevention	7
Coupling the seed drill to the tractor	7
Using the PTO shaft	8
Using the hydraulic system	8
Operating the seed drill	8
Care and maintenance	9
Description & Technical detail	10
Setting up and using the seed drill	11
Road Transport	11
Coupling the seed drill to the tractor	11
Setting the sowing depth	12
Calibration and sowing	13
Setting the seed rate	13
Changing the metering system from normal to fine seed	14-16
Calibration test	17-20
Hydraulic drive fan drill instructions (optional)	20-22
Care & Maintenance	23
Packer Roller	23
Nuts & Bolts	23
Seed tube/coulter adjustment	23
Daily maintenance	24
Emptying the hopper and metering system	24
Dampness	25
Storage and post season	25
Wearing parts	26
Parts list of common serviceable components	27-28
Moore Unidrill techniques	29-32
EU Declaration and conformity	33
Trailed Drill Supplement	34-35

Guarantee Guidelines

1. Our products are guaranteed [for a period of 12 months commencing on the date of delivery to the user. The guarantee does not cover the replacement of parts subject to wear.
2. Guarantee claims must be submitted to Moore Unidrill Manufacturing Ltd product support team. Claims cannot be considered unless the claim form has been completed in full and submitted no later than 3 months after occurrence of the damage or defect giving rise to the guarantee claim.
3. Parts replaced under the terms of the guarantee will first of all be charged to the customer pending a decision by Moore Unidrill Manufacturing Ltd product support team as to whether or not the guarantee claim is justified. Faulty parts must therefore be returned to our workshop for inspection.
4. Once the guarantee claim has been acknowledged, a credit note will be issued on the basis of prices ruling on the date on which the guarantee claim was received and in accordance with Moore Unidrill Manufacturing Ltd general terms of delivery and payment.

Safety instructions

Please read all safety instructions contained in this operating manual with the utmost care and observe all warning signs attached to the seed drill. These warning signs must be kept in a legible condition and must be replaced if missing or damaged. This is especially the case when whole sections are replaced when making repairs.

Follow these instructions to prevent accidents. These instructions must also be made available to all other users. You are advised to refrain from any working methods which may be hazardous.

Proper use

Moore Unidrill seed drills are based on state-of-the-art technology and are manufactured in accordance with recognized safety requirements. Nevertheless, the use of these seed drills does not preclude the risk of injury to the user or third parties and/or the risk of damage to the seed drill itself or to other materials or items of equipment.

Always make sure that the seed drill is in a technically perfect condition and that it is used properly and for its intended purpose and entirely in accordance with the instructions given in this manual. Any malfunctions or defects which might affect the safe operation of the seed drill must be immediately rectified.

The seed drill may be used, maintained, and repaired only by persons who are familiar with its working and have been made fully conversant with the risks involved.

OEM replacement parts and accessories from Moore Unidrill have been specially designed for use with Moore Unidrill drills. Any replacement parts and accessories not supplied by Moore Unidrill have not been tested or approved by us. The installation and/or the use of non-genuine Moore Unidrill parts may under certain circumstances have a negative influence on the given design features of your seed drill and may therefore adversely affect its safe and reliable operation and your safety.

Moore Unidrill cannot be held liable for damage or injury caused by the use of non-genuine replacement parts or accessories.

Moore Unidrill seed drills are intended for seeding (sowing). Any uses other than those for which the seed drills are intended, such as transportation, will automatically exempt the supplier from its / their Moore Unidrill liability in respect of ensuing damage. Such cases of improper use will therefore be entirely at the user's own risk.

All relevant accident prevention regulations, as well as other generally acknowledged safety and health regulations and road traffic regulations, must be strictly observed.

Improper use also comprises failure to observe the instructions given in this operating manual and the manufacturer's maintenance and servicing requirements.

Operational safety

The seed drill must not be put into operation until the user has been given proper initial instruction either by the dealer or by one of Moore Unidrill Manufacturing Ltd representatives or employees. All warranty registration forms are to be completed via the Moore Unidrill website www.moore-unidrill.com

The seed drill may be used only if all safety devices, such as detachable guards are fitted and in proper working order.

Nuts and bolts should be checked at regular intervals and tightened if necessary.

Tyre pressures must also be checked regularly (trailed models only)

In the event of a malfunction, immediately cease operation and secure the seed drill in its stationary position. Malfunctions must be eliminated immediately.

No liability for consequential damage

Even though your Moore Unidrill seed drill has been manufactured with the utmost care and you are using it properly. Fluctuations and interruptions in seed delivery may still occur, the possible causes being:

- differences in composition of the seed or fertilizer (grain size, density, shape, dressing, treatment)
- clogging or bridging (e.g., through foreign bodies, glumaceous seed, sticky dressing agents, moist fertilizers)
- worn parts (e.g., metering device, v-belt)
- damage through external influences
- incorrect drive speeds and forward speeds
- incorrect setting of seed drill (wrongly mounted, failure to observe calibration charts)
- incorrect connection or operation of the electronic seed drill drive or an error in the tractor's electric installation.

It is therefore advisable, both before and during use, to check that the seed drill is functioning properly and delivering the seed with the required accuracy. Such deviations in the delivery rate are only partially detectable by the electronic seed drill control and the monitor of the electronic seed drill drive.

Any claims for damages not directly incurred by the seed drill cannot be accepted. Moore Unidrill cannot be held liable for any consequential damage resulting from incorrect metering or distribution.

Road safety

Road traffic regulations must be observed when towing the seed drill on roads, paths, and other public places. The seed drill must be in a roadworthy condition.

Observe the maximum permissible width for road transport and fit all necessary rear lights, warning signs and guards. Disconnect the electrical supply when fitting.

Fold up the side sections, track markers, etc. and secure them in the transport position. When transporting the seed drill on the road, lock the control valve in the tractor cabin to prevent the coulter bar from being opened out accidentally. In addition, close the ball valve in the hydraulic hose.

Trip ropes for quick-release couplings must hang loose and must not, when in their lowered position, release the couplings of their own accord.

Observe maximum permissible axle loads, the load-bearing capacity of the tyres and the maximum total weights to ensure adequate steering and braking. The behaviour of the tractor is also influenced by attached implements. Take the width and balancing weight of the seed drill into consideration, especially on sharp bends.

No persons may be allowed to ride on or in the seed drill.

Accident prevention

Care must be paid not only to the safety instructions contained in this operating manual but also to 'the accident prevention regulations governing the operation of agricultural machinery'

Coupling the seed drill to the tractor

The act of coupling and uncoupling the seed drill (using the three-point linkage) involves a high risk of injury. The following instructions must therefore be carefully observed:

- Secure the tractor in such a way that it cannot roll forwards or backwards.
- Slowly and carefully work the three-point linkage power lift system.
- Be extremely careful when working with a three-point linkage.
- Position the seed drill with its support legs on firm, level ground.

The tractor and the seed drill must be equipped with the same category of three-point linkage.

Using the PTO shaft

Use only the universal joint shaft which is intended for use with your seed drill and make sure that it is fitted with the prescribed protective equipment (protective tube and funnel shaped P.T.O. shaft guard must be fitted). Make sure that the tractor engine and the P.T.O. shaft are switched off before proceeding to fit the universal joint shaft.

Make sure that the tubes overlap by the prescribed distance in both transport and operating position and are secured in such a way that they cannot rotate with the shaft.

Be sure that there is nobody standing in dangerous proximity to the seed drill when you switch on the P.T.O. shaft.

The P.T.O. shaft speed of the tractor must correspond with the maximum permissible rotational speed of the seed drill. The angle of attachment will depend on the type of P.T.O. shaft (see operating instructions for P.T.O. shaft).

Always switch off the P.T.O. shaft whenever the P.T.O. shaft is not required.

Using the hydraulic system

Do not connect the hydraulic hoses to the tractor's hydraulic system until you have made sure that the system is at zero pressure on both the tractor and the equipment side.

The hydraulic system generates extremely high pressures. All piping, hoses and connections must therefore be checked regularly for leakage and visible external damage. Use a proper and thorough means of searching for leakage and repair all damage immediately. Spurting hydraulic oil can cause injuries and fires. Call a doctor immediately in the event of injury.

To exclude the possibility of incorrect connection, all mating plugs and sockets belonging to the hydraulic connections between the tractor and the seed drill should be marked with matching colours. Ensure hydraulic fittings are clean and free of grit / dirt that could cause damage.

Operating the seed drill

Prior to start-up and operation, make sure that nobody is standing in dangerous proximity to the seed drill.

No persons may ride on the seed drill during operation.

None of the prescribed guards supplied with the seed drill may be removed during operation.

Care and maintenance

Observe all maintenance check interval guidelines and inspections.

Before carrying out any care or maintenance work, always de-pressurize the hydraulic system and switch off the P.T.O shaft and the tractor engine. Uncouple the seed drill from the tractor.

Make sure, prior to carrying out any care or maintenance work on the drill, that the seed drill is standing on firm, level ground and cannot roll away or tip over (use the parking stands supplied). Use the steps provided for access to the drill, do not use parts of the frame.

When cleaning down the drill, ensure any electrics are covered to avoid water damage.

All hydraulic lines must be checked for leakage, looseness, abrasion, and damage. All defects and damage must be immediately rectified.

Prior to carrying out maintenance and repair work on the electrical system, disconnect it from the power supply.

When carrying out any welding on the seed drill, disconnect the drill fully from the tractor.

All screw connections which had been slackened or unscrewed for maintenance and repair purposes must be refitted and properly tightened.

Description and technical detail



1. Hopper Access Steps
2. Handrail
3. 850L Hopper
4. Tractor Top Link
5. Cat 3 Linkage Mount
6. 1000rpm PTO Drive Fan (Optional Hydraulic Drive)
7. Parking Stand (shown in work position)
8. Rear Packer Depth Rams
9. Land Drive Wheel
10. Hopper A-Frame
11. Rubber Suspension Arms
12. Seeding Coulter Disc Assembly
13. LED Road Lights
14. Self-Cleaning Prism Packer Roller

Setting up and using the seed drill

Road transport

Fit warning signs and the necessary lighting and guards for road transport.

Make sure the seed hopper is empty before you proceed to transport your seed drill along the road.

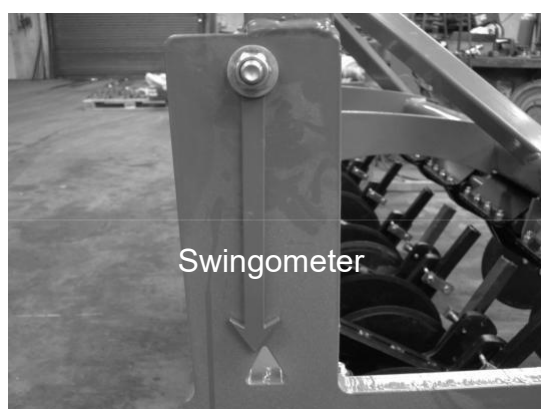
The maximum speed at which the seed drill may be transported on the road is 25km/h.

Retract the land drive wheel and lock it in position.

Fold up the hopper access steps.

Coupling the seed drill to the tractor

When coupling the seed drill to tractor, make sure there are no persons standing between the tractor and the seed drill.



Set the tractors draft links in such a way that the seed drill can swing sideways only very slightly, and so that each arm can float independently, and allow the rear packer to control the seeding depth independently of the tractor. After hitching on to the lower links, raise the drill and fold up the parking stands, slide them inside the chassis and secure with the linch pins provided.

Lower the lower link arms and then attach the top link.

The top link should be positioned as high as possible on the tractor and as low as possible on the headstock so that the seed drill is as parallel as possible with the ground when raised.

On level ground, set the top link length so that the swingometer on the side of the drill points to the middle position, to indicate that the chassis is level, so that both front and rear discs will operate at the same depth.

Make sure the tractor engine and PTO are switched off before you proceed to fit the universal joint shaft.

Observe the special operating instructions for the universal joint shaft. (If fitted)

In the case of some tractor models, the universal joint shaft must be cut to the correct length. This must be done in such a way that the power transmission is not adversely affected. After shortening the shaft, cut the PTO drive shaft guard to size at both ends and then de-burr, clean and grease the protective tubes and the special section tubes.

After it has been adapted fit the universal joint shaft.

The PTO shaft speed of the tractor must correspond with the maximum permissible rotational speed of the seed drill.

In the field pull out the land drive wheel and secure with pins provided in working position. An adjustable stop can be used to set the downward limit of the drive wheel.

When unhitching the drill, fully extend the hydraulic packer rams so the machine is in its shallowest working position and the packer is carrying the weight of the drill. Set the drill down, and uncouple the top link first, then raise the drill, with the full weight on the rear packer, at this point pull out the parking stands, so that the hinge is just proud of the chassis, unfold them, and gently lower the drill onto the stands, making sure the hinge mechanism has engaged properly on both sides until they have taken the remaining weight, at which point, uncouple the lower link arms.

Failure to follow this procedure will cause damage to the hinge mechanism on the parking stands.

Setting the sowing depth

The sowing depth can be adapted to the soil conditions by adjusting the coulter pressure.

This is done by adjusting the hydraulic packer depth control ram to the desired depth on the sliding depth sight gauge. The rear packer acts as a depth stop and can increase and decrease the amount of pressure on the discs.

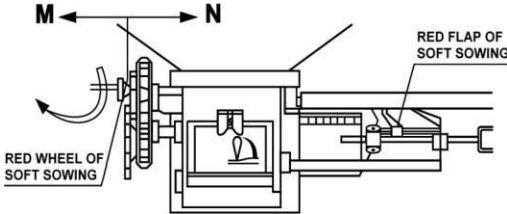
In normal circumstances, in good moist conditions, very few of the removable ballast weights are required to achieve grass and small seeding depths, and so these 27kg weights, can be added and removed as required. Please observe HSE manual handling guidelines.

When the desired seeding depth is achieved, check that the front and rear coulters are sowing at the same depth, by re-adjusting the top link again, and keeping the swingometer in the central and therefore level position.

Calibration and sowing operation

Setting the seed rate

To obtain the desired seed rate, please refer to the seed rate calibration chart, which indicates the settings for medium to large seeds on the left-hand side and fine seeds on the right-hand side.

SEED RATE CHART																					
Type of seed:	Wheat	Rye	Barley	Oats	Beans	Peas	Lupines	Vetches	Corn	Grass	Type of seed:	Rape	Red clover	Grass							
kg/dm ³	0,77	0,74	0,68	0,5	0,85	0,81	0,76	0,83	0,79	0,36	kg/dm ³	0,65	0,77	0,39							
Standard seeds Kg/ha											Fine seeds Kg/ha										
Fan opened -N-											Fan ½ closed -F-										
Standard seeds	10	34	33	32	24	23	21	28	32	8	Fine seeds	2,50	1,80	0,90	2,30	1,15					
	15	51	49	48	35	42	40	45	51	24		5,00	4,60	2,30	5,30	2,65					
	20	69	66	64	47	61	59	62	70	47		7,50	6,80	3,40	8,60	4,30	2,80	1,40			
	25	86	83	79	59	79	78	79	89	70		10,00	9,10	4,55	12,00	6,00	5,20	2,60			
	30	104	100	95	71	98	97	96	108	92		12,50	11,40	5,70	15,30	7,65	7,20	3,60			
	35	122	117	111	82	116	117	113	127	115		15,00	13,70	6,85	18,00	9,00	9,20	4,60			
	40	140	134	127	94	135	136	130	146	137		17,50	15,90	7,95	21,30	10,65	11,20	5,60			
	45	157	151	143	106	154	155	147	165	156		20,00	18,20	9,10	24,00	12,00	13,20	6,60			
	50	174	168	159	118	172	174	164	184	175		22,50	20,50	10,25	26,60	13,30	15,00	7,50			
	55	192	184	174	130	191	194	181	203	194		25,00	22,80	11,40	27,50	13,75	16,20	8,10			
	60	210	200	190	141	209	213	198	222	212			N	M	N	M	N	M			
	65	228	217	206	153	228	232	216	241	231											
	70	246	235	222	165	246	251	234	260	249		N = NORMAL M = MICRO									
	75	264	252	238	177	265	270	251	279	267		85 handle turns = 1/10 ha									
	80	281	269	253	189	283	289	268	298	285											
	85	298	286	268	200	302	309	285	317	304											
	90	316	302	284	212	320	328	302	336	323											
	95	335	319	300	224	338	347	320	355	342											
	100	352	337	316	236	356	366	337	374	361											
	105	370	354	332	248	374	385	354	393	380											
	110	387	371	348	260	393	404	371	412	398											

To determine the correct adjustment value, first specify whether the seeds are normal or fine:

- Normal seed: between 4 and 10 mm
- Fine seed: between 1.5 and 4 mm

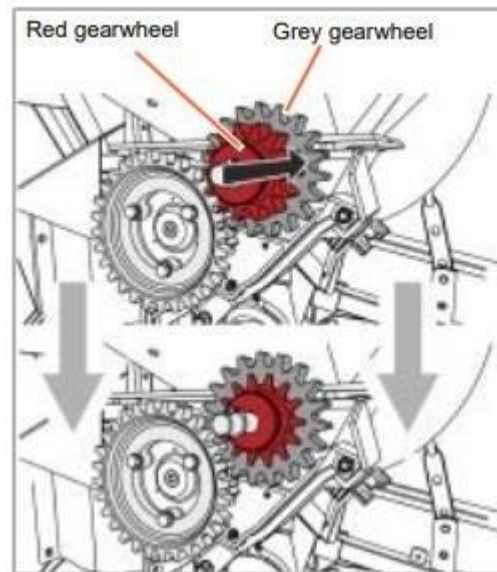
The table contains orientation values for a variety of normal and fine seeds, and for various amounts of seed per hectare. These values are for orientation purposes only. Seed can vary regarding grainsize and relative density. Determine the exact adjustment value for your seeds by means of a calibration test.

Changing the metering system from normal to fine seed

The micrometering system allows for the application of fine seed and small amounts of seed per hectare. The micrometering system is normally switched on at the factory.

To **Switch Off** - Push the red gearwheel into the grey gearwheel behind it until they mesh

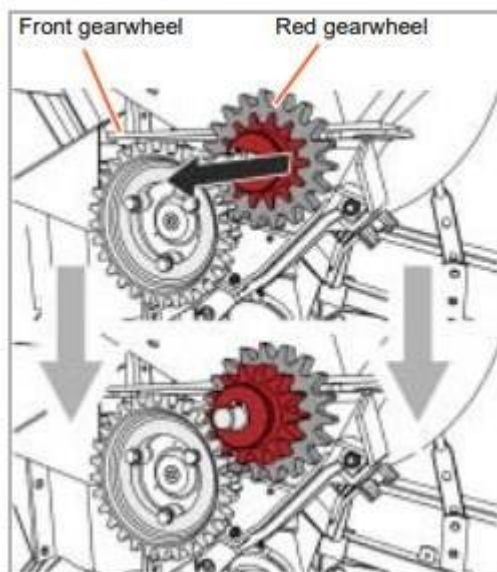
Switch off



Note: When inserted or pulled out, the gearwheels must align so that the red gearwheel can be easily pushed in or pulled out.

To **Switch On** - Pull out the red gearwheel so that it engages with the front wheel

Switching on

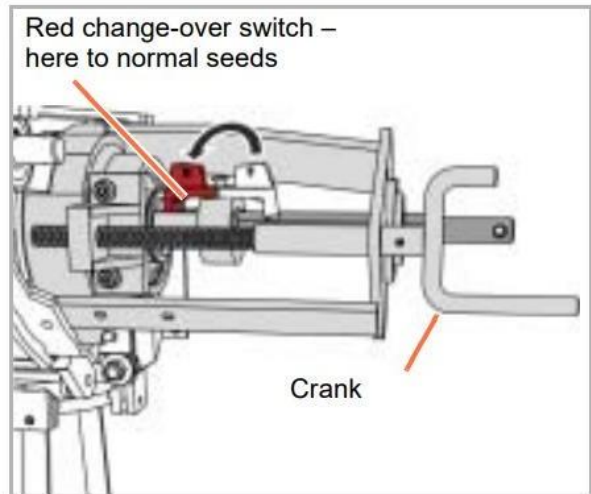


Using the crank, set the adjustment value for the desired seed type. Turn until the desired seed value appears at the edge of the housing

□

The red change-over switch for setting either normal or fine seed is located on the hexagonal tube on the metering device.

Normal seed

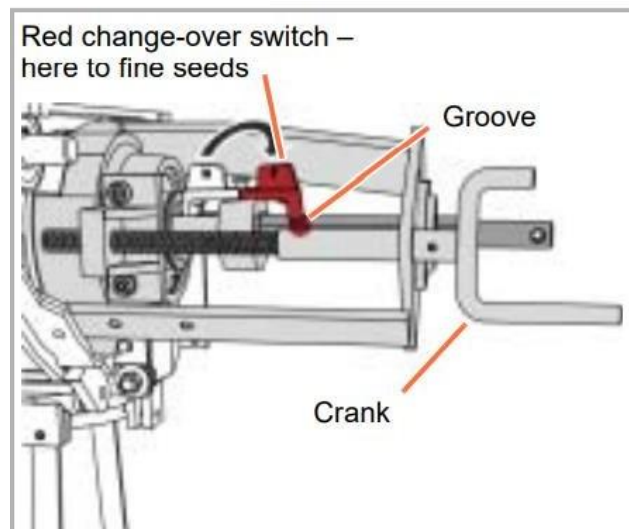


Note: Only switch from normal to fine seed if the seed hopper is empty. Changing the setting when the seed hopper is full can destroy the metering device.

Fine seed

Now set the change-over switch on the metering device:

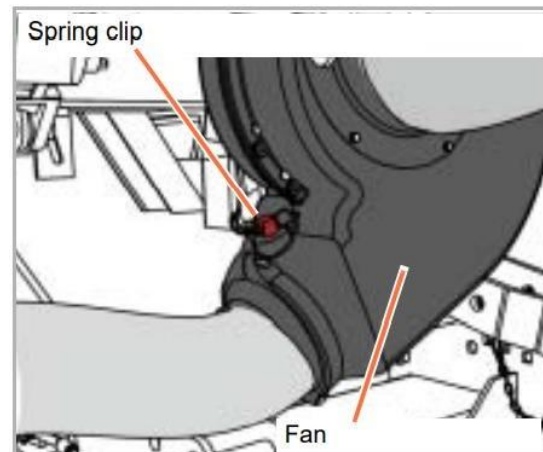
- Normal seed = Red change-over switch points towards the metering device
- Fine seed = Red change-over switch must engage in the hexagonal shaft groove on the metering device and point away from the metering device



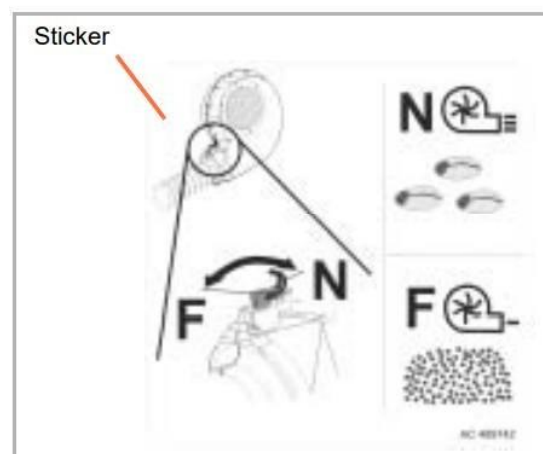
The **regulating flap** on the fan regulates the airflow for the seed. Set the regulating flap according to the seed either "normal seed" or "fine seed".

The illustration shows the flap set to "normal seed"

Swivel the lever by 90° degrees in the direction of the arrow to change to "fine seed"



Also observe the sticker on the fan:

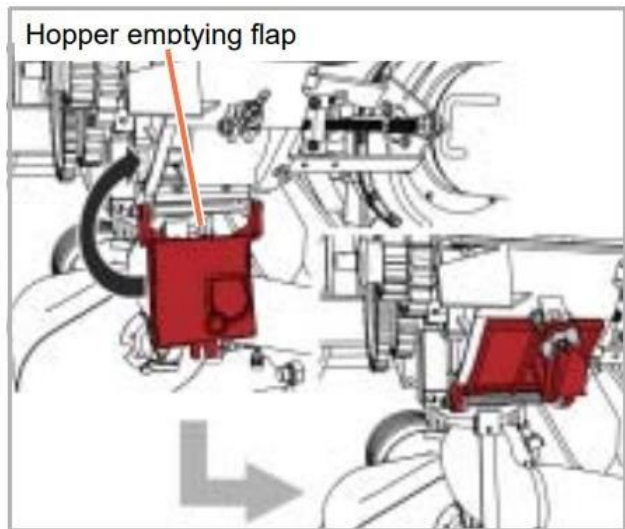


Calibration test

The calibration test is usually performed on farm.

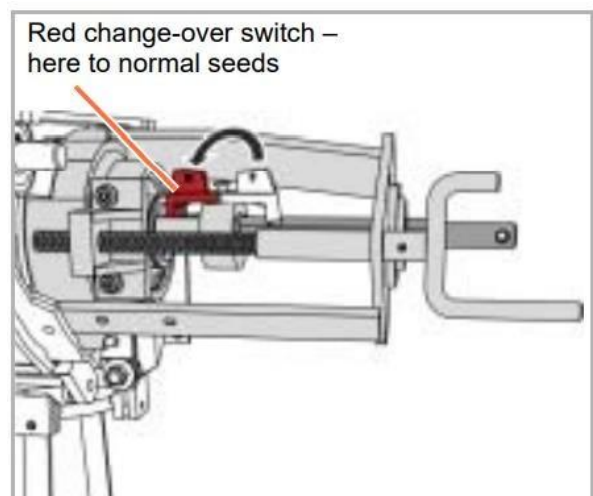
Before you can begin the calibration test:

- Close the emptying flap at the metering device

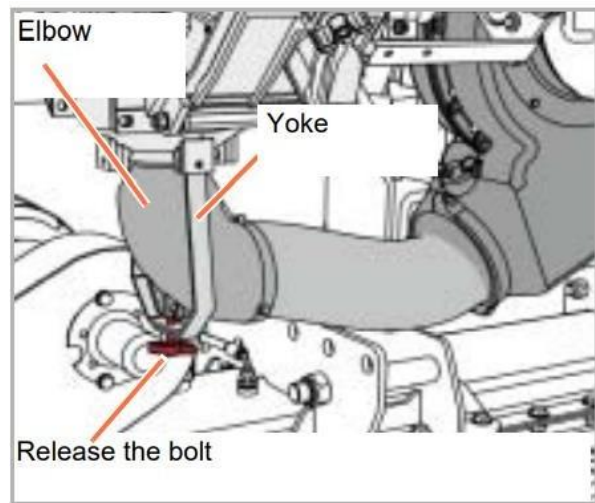


Note: Check the seed hopper. Inspect the seed hopper for foreign bodies. Foreign bodies in the seed hopper can cause damage to the machine.

Place the red change-over switch into the "fine" or "normal" seed position



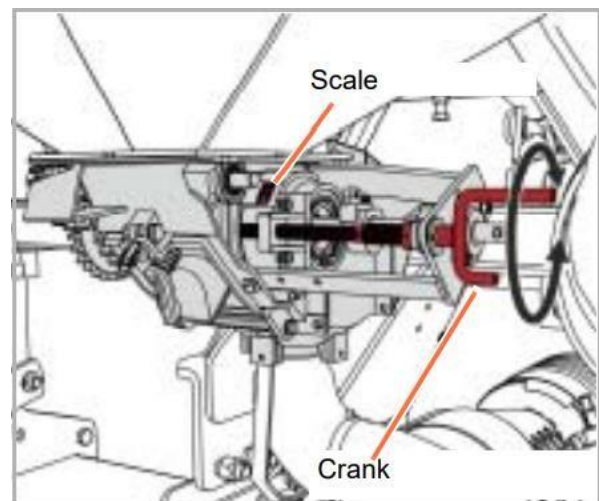
- Place a catch pan under the metering device (the catch pan must be large enough to hold the amount of seed generated during the calibration test)
- Release the bolt
- Fold the bracket to the side
- Remove the elbow



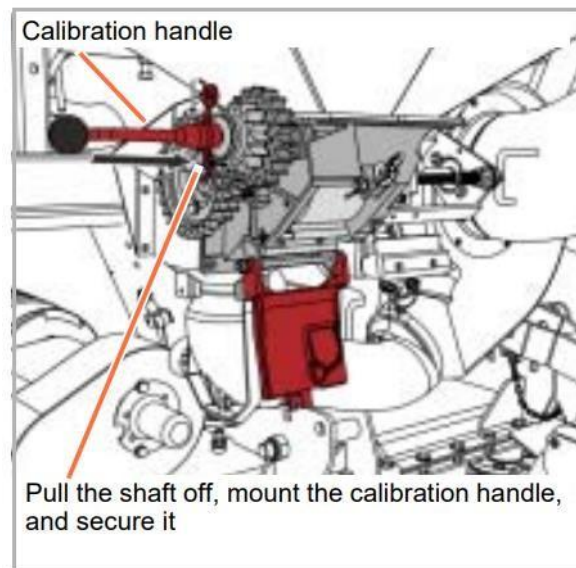
Read the adjustment value for normal or fine seed from the table on the seed hopper or in this manual (see page 12)

Note: There must be no seed in the metering device if you are decreasing the cell width.

- Using the crank, set this value on the metering device. Adjusting to this value changes the metering device cell width.
- Add sufficient seed to the seed hopper for the calibration test.



- Remove the calibration handle from its retainer
- Pull the shaft off and mount the calibration handle on the shaft. Secure with a cotter pin.



The seed metering system is now ready for the calibration test. Perform the calibration test according to the machine settings for normal or micrometering.

Select the speed at calibrating with the calibration handle to fit the later driving speed.

Normal metering

For normal metering, the calibration test is performed for 0.10 ha.

- Carry out 85 revolutions with the calibration handle mounted on the metering device

Micrometering system

For micrometering, the calibration test is performed for 0.10 ha.

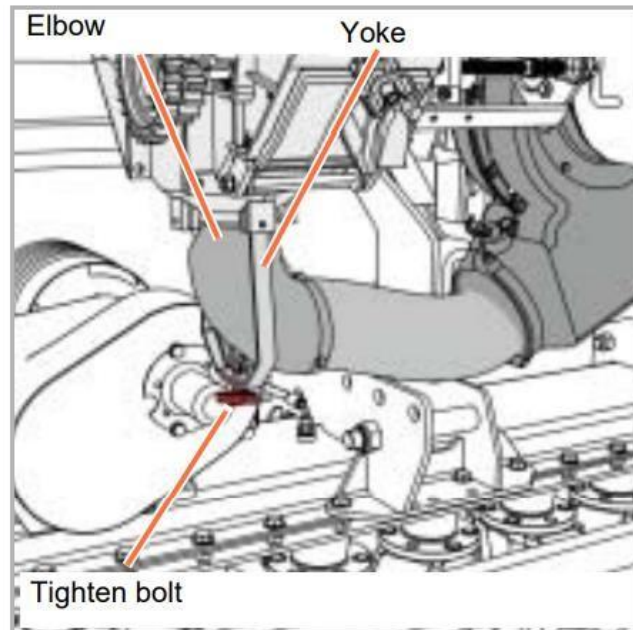
- Carry out 85 revolutions with the calibration handle mounted on the metering device

Evaluating the calibration test

- The calibrated quantity of seed represents the amount sown for 0.10 ha.
- We recommend performing the calibration test at 0.10 ha for seed quantities up to approximately 100 kg/ha, and at 0.05 ha for larger quantities. At 0.05 ha, halve the number of revolutions to 42.5.
- Weigh the seed
- The amount of calibrated seed does not necessarily correspond to the amount specified in the table. For example, one reason for this is the difference in the thousand grain weight.
- Convert the difference to the quantity in the table into percent
- Correct the adjustment value at the metering device up or down by this percentage. When doing this, ensure there is no seed in the metering device if you are decreasing the cell width.

□

Reattach the elbow and secure it to the bracket with a bolt



Hydraulic drive fan drills (optional)

The oil flow is directed to the 3-way flow control valve and is thus regulated according to the speed of the hydraulic motor. The constant oil flow rate results in a specific rotational speed of the hydraulic fan drive. The speed can be viewed via the display in the tractor cab via a speed sensor which is attached to the hydraulic motor.

Safety precautions

Moore Unidrill does not accept liability for damage due to incorrect usage of the drill to either the drill or tractor. Only trained and competent persons should carry out repair and changes to the Hydraulic Fan. At all times, disconnect the hydraulics before working on the machine.

Product data

Hydraulic motor		Oil Flow (Rate)	Fan
Displacement (cm ³)	Speed (rpm)	(l/min)	Fan Speed (rpm)
8	4200	40	4200

Requirements for the hydraulic fan drive on the tractor:

- Sufficient oil supply by the tractor
- The appropriate number of control valves is available
- Parallel operation of the control valves is possible
- Oil cooler is available

Installation of hydraulic hoses

Oil escaping under high pressure can penetrate clothing and skin and causes serious injuries. In case of injury, emergency first aid services should be called.

Always fit the hydraulic hoses so that they won't be damaged or exposed to chafing while lifting the seed drill up and down in work.

Connecting to the tractor

The freeflow return prevents damage to the hydraulic motor.

- ! Maximum permissible pressure in the freeflow return is 10 bar.
The hydraulic motor will be damaged by overpressure.

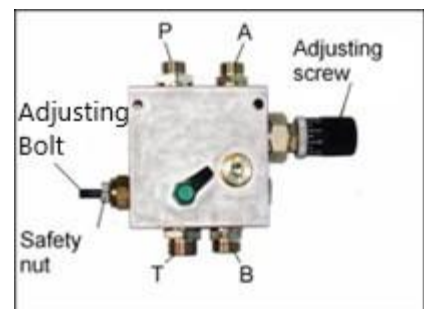
Following points must be considered when selecting the position of the freeflow return connection to the tractor hydraulic system:

- Return oil must flow through the tractor hydraulic filter system
- Return oil must not flow through any regulation valves (freeflow return) to avoid any back pressure.

Operation of the hydraulic fan

- ! The fan speed on the hydraulic fan drive must not exceed 5000 rpm. At higher speeds the fan can be destroyed by explosion, causing serious damage to the machine. Only adjust the revolution speed while the fan is switched off.

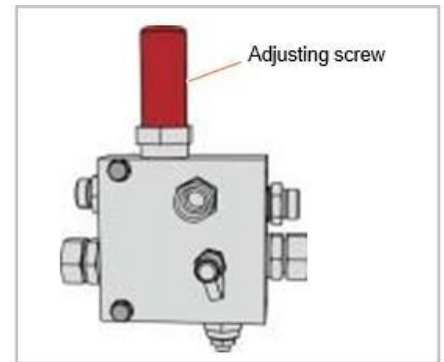
A= Input to the hydraulic valve/motor
B= Outlet from the hydraulic valve/motor
P= Input (From the tractor)
T= Outlet (free flow return)



Tractors with flow control valve

The 3-way flow control valve is completely open when the adjusting screw is fully screwed in.

- Fully open the 3-way flow control valve
- Actuate control valve on tractor
- Set the desired fan speed by regulating the oil flow rate on the tractor



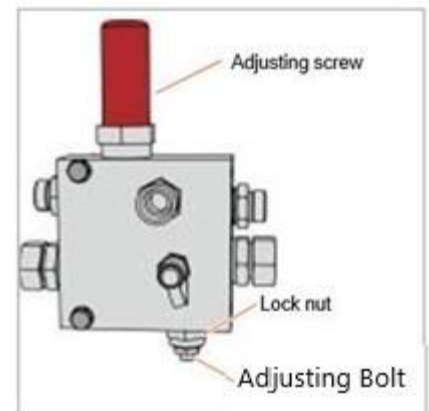
Tractors without flow control valves, without regulating pumps

- Fully open the 3-way flow control valve

Tractors without flow control valve, with regulating pumps (e.g. Fendt and others)

The flow control valve must be converted from 3-way to 2-way. Perform the conversion as follows:

- Release the lock nut
- Thread in the adjusting bolt completely. The conversion to a 2-way flow control valve is now completed.
- Retighten the lock nut
- Gradually engage the tractor's hydraulic flow, starting at a low setting and increasing it steadily until the desired fan speed is achieved.



Care and Maintenance

All maintenance should be carried out with machine unhitched, with packer roller in the lowest position, the top link unattached, and both front stands in park position. There is no need ever to get underneath the machine whilst mounted on the tractor. All maintenance and checks can be achieved whilst in the park position. In the highly unlikely event of coulter blockage, this can be relieved, by undoing the corbin clips which attach the flexible seed pipes to the top of the tungsten seed tube coulters and relieving the blockage with a long screwdriver or piece of stiff wire from above. When removing articles for service, please observe HSE manual handling guidelines.

Self-Cleaning Prism Packer Roller

The packer roller is self-cleaning except at each end, where the hardox scrapers work to clean the back-to-back 50cm rings. Scrapers should be adjusted and replaced as necessary.

The packer bearings (1 on each end, and 2 in the middle) should be greased every 20 hours of work and before storage.

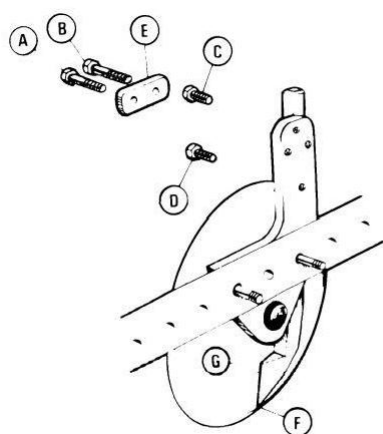
Nuts and bolts

All nuts and bolts should be checked regularly. When working in stoney or trashy conditions it will be necessary to check all nuts and bolts daily, particularly the seed tube coulters and disc bolts.

Seed tube coulter adjustment

Check the position of the seed tube coulters in relation to the disc coulters daily.

For most seeding conditions and generally the tip F of the seed tube coulter should be set so that it is approximately 12mm above the outer edge of the disc.



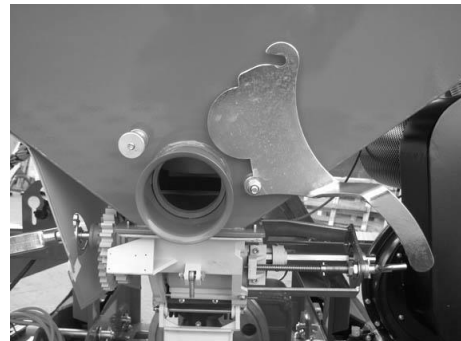
The leading edge of the seed coulter should be set parallel to the disc and just touching it. This can be achieved by means of the retaining bolts A+B and the adjusting screws C+D. If the tip, F, of the seed coulter is out from the disc, this can be corrected by tightening bolt A (front bolt) more than bolt B, while the top, G of the seed coulter can be brought in towards the disc by tightening bolt B (rear bolt) more than bolt A. Some discs may be slightly distorted, but when in work the side force of the soil on the disc will keep it in contact with the seed coulter. A certain amount of bedding in and wear takes place between the disc and the seed coulter, and it may become necessary to adjust screws C+D to position the seed coulter closer to the disc.

Daily maintenance

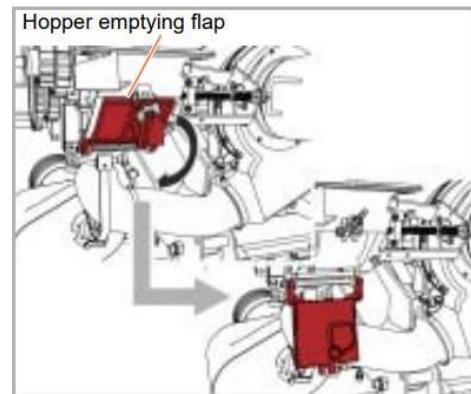
- Clean the brush for the fine seed barrel regularly to avoid blockages.
- Grease the PTO shaft yokes and guards daily through the appropriate nipples.
- Grease all the pivot points provided with grease nipples.
- Check the fan belt for tightness and adjust it if necessary.
- Check all nuts and bolts for tightness before starting work and during the first 40 hours.
- Check all wearing parts for tightness and breakage and replace them if necessary.
- Check all electrical connectors

Emptying the hopper and metering system

- After drilling, the hopper and metering system must be emptied completely.
- To empty the hopper, place a suitable container or a seed collector sheet under the hopper and open the gate valve.



- You can also turn the drive wheel or the hand crank to completely empty the cells.
- Place a suitable container or seed collector sheet under the metering device
- Open the emptying flap
- Catch the seed
- Close the emptying flap



Dampness

If water enters inside the hopper and tubes, it is important to run the fan until the tubes are dry to avoid seeds and dressing mixing with the moisture and creating blockages.

Storage and post season

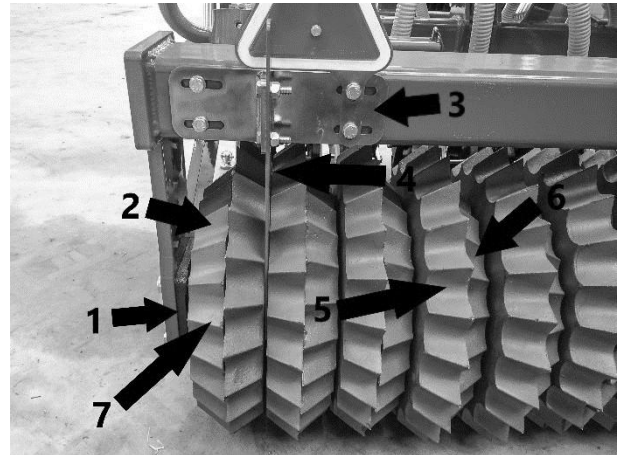
Before storing the machine, check all the parts for wear and damage and replace them as necessary.

When parking the machine, always use the parking legs fitted to the coulter bar to relieve the weight from the coulters and discs.

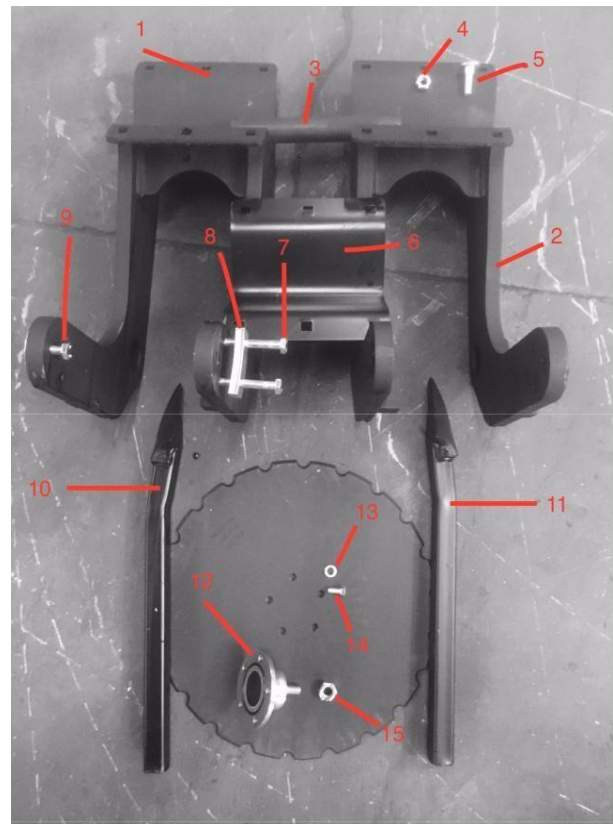
Protect all the electrical connectors with water repellent products.

Wearing Parts

1. PA900597 UCF 40mm Bearing
2. PA900354 45cm Special End Ring
3. PA900420 Hardox Scraper Holder
4. PA900595 Hardox Scraper
5. PA900464 50cm Ring
6. PA900331 45cm Ring
7. PA900892 1470mm Shaft



1. PA900775 LH 90mm Spacing Disc Arm
2. PA900776 RH 90mm Spacing Disc Arm
1. PA900777 LH 125mm Spacing Disc Arm
2. PA900778 RH 125mm Spacing Disc Arm
3. PA900021 Rubber Cord 300mm
4. PA900002 M12 Nyloc Nut
5. PA900028 M12 x 40 Cup Head Sq Bolts
6. PA900616 Suspension Arm Upper
7. PA900026 M10 x 70 Bolt
8. PA900013 Seed Tube Retaining Plate
9. PA900089 M10 x 20 Set Screw
10. PA900152 RH 30mm Coulter (Tungsten)
11. PA900153 LH 30mm Coulter (Tungsten)
12. PA900029 5 Hole Hub Bearing
13. PA900007 3/8" Spring Washer
14. PA900010 3/8" x 3/4" UNF Set Screw
15. PA301515 M16 Binx Nut
16. PA900008 415 x 5mm Notched Disc



Parts list of common serviceable components

Part No	Material	Quantity
PA900029	Moore Unidrill Peer Hub 5 hole 3/8" UNF	1
PA900775	LH 90mm Spacing Grass Suspension Unit	1
PA900776	RH 90mm Spacing Grass Suspension Unit	1
PA900777	LH 125mm Spacing Arable Suspension Unit	1
PA900778	RH 125mm Spacing Arable Suspension Unit	1
PA900779	LH 125mm Spacing Arable <i>Outer</i> Suspension Unit	1
PA900780	LH 125mm Spacing Arable <i>Outer</i> Suspension Unit	1
PA900616	Upper Suspension Arm Bracket	1
PA900008	Moore Unidrill Notched 415x5mm Disc 5 Hole	1
PA900152	Right Hand Tungsten 30mm Coulter	1
PA900153	Left Hand Tungsten 30mm Coulter	1
PA900010	3/8 X 3/4"UNF SET SCREW	5
PA900007	3/8 Rectangular Spring BZP Washer	5
PA900013	Seedtube Retainer Plate	1
PA900035	Rubber Cord 240mm (For Grass 90mm Spacing)	4
PA900021	Rubber Cord 300mm (For Arable 125mm Spacing)	4
PA900028	M12 x 40 Cup Head Square Bolt 8.8	8
PA900465	Cat 3 Top Link Pin	1
PA900422	Cat 3 Bottom Link Pin	2
PA900274	Cat 2 Top Link Pin	2
PA900421	Parking Legs LH/RH (Pair)	2
PA900052	7/16 Lynch Pin	15
PA900626	LED Lights	2
PA900349	7 Pin Plug	1
PA900423	Light Mounting Brackets LH/RH (Pair)	2
PA900420	Guttler Scraper Mounting Plate	2

Part No	Material	Quantity
PA900595	Guttler Hardox Scraper	2
PA900457	Drive Wheel Rest	1
PA900597	Guttler Packer Bearing	4
PA900354	Guttler 45cm End Ring	4
PA900464	Guttler 50cm Ring	26
PA900331	Guttler 45cm Ring	22
PA900892	1472mm Packer Shaft	2
PA900509	1.25" Washer Pin & Split Pin	2
PA900652	1/4" Lynch Pin	2
PA900466	Handrail	1
PA900467	Step Frame	1
PA900400	Safedek 360x750	1
PA900399	Safedek 300x750	1
PA900879	Hectametre	1
PA900017	Hose Corbin Clip	1
PA900054	Hose Holder Plastic Sleeve	1
PA900433	Walterscheid PTO Shaft	1
PA900655	PTO Yoke 30mm Round	1
PA900415	SPZ1512 Drive Belt	2
PA302914	Replacement Landwheel for 3m	1
PA900639	27kg Wafer weights	20
PA900215	Amber Reflector Amber Round Sticky	2
PA900654	Top Link Cat 2	1
PA900628	LED 2 Chamber Rear Lamp c/w 7m	2
PA900312	Red/White Triangle Reflector	2
PA900273	Hydraulic Cylinder 420x134 Stroke Ram	2
PA900863	7 Pin Stocket Mounting Bracket	1

Techniques

The Moore Unidrill prepares its own mini seedbed by using an angled disc and seed tube coulter tine. All seeds are planted at a constant depth. The points of the Guttler roller slit the ground 305 times per square meter, to give good seed soil contact, however in some conditions another pass with a roller is necessary. In all conditions, drilling should be conducted in reasonably straight lines as turning with the drill engaged in the ground, can cause premature bearing failure, and blockages, by pulling the disc away from seed tube coulters.

Direct drilling grass or clover into grass

A healthy field of grass is one of the most valuable assets a livestock farmer can have, and direct drilling can help you grow more and better grass at less cost, because there is less labour, machinery and time involved. Other benefits are reduced poaching, a reduction in the number of broad-leaved weeds. The direct drilling of grass into either a short-term or mid-term sward is a simple enough matter, and even long-term worn out pastures can be reseeded with the direct drill provided a few precautions are observed.

A one-to-ten-year-old sward which is open, presents few problems having had no time to build up any substantial quantity of mat/thatch under the surface. As a rule of thumb, if you can sink the disc into 25mm of 80% clean soil and not root mat/thatch, then you are in business. As with all reseeding, weather plays an important part, but with reasonable moisture and heat the following methods may apply for successful seeding.

Method 1, No chemical top up. Clean (weed free) open swards following silage

Where a final cut of silage has being taken, and the field is going to grazing, cut low to the ground and direct drill 1/2 to full rate seeds as soon as possible, whilst moisture is retained in the ground, and before the regrowth starts. There should be enough moisture retained in the ground to get the seeds germinated and provided it doesn't dry out subsequently due to lack of rain, seed should be established before the old sward has fully recovered and should be grazed with young stock or sheep 2 to 4 weeks later, depending on growing conditions. This grazing keeps the old grass down, stops the old sward choking the new seedlings, and allows light into the newly established grass. This sward should be grazed in 2/3 weekly intervals until the end of the season, never overgrazing as this can cause the new seedlings to be pulled out. Newly established grass often does not normally become apparent until the regrowth following first cut the following season.

Check the pH of ground prior to seeding and apply lime as necessary to get the ideal pH of 6.5, especially with clover. A light to medium coat of slurry immediately after seeding (depending on moisture) can be applied providing it contains no effluent or dairy washings.

Method 2, No chemical top up. Clean (weed free) open swards following grazing

Graze the sward bare, using a mob stocking rate, harrow/rake/roll the dung pats, if necessary, drill the sward, and keep the stock grazing on, until the new shoots are just visible. As above re graze in 2 to 4 weeks' time, depending on growth.

Check the pH of the ground prior to seeding and apply lime as necessary to get the ideal pH of 6.5, especially with clover.

A light to medium coat of slurry immediately after seeding (depending on moisture) can be applied providing it contains no effluent or dairy washings

Method 3, Early Spring drilling

If the pasture has been badly poached, or there are bad patches due to frost kill, leatherjackets, pests etc, over the winter, new grass seeds should be drilled in just before growth starts in springtime.

Check the pH of the ground prior to seeding and apply lime as necessary to get the ideal pH of 6.5, especially with clover.

A light to medium coat of slurry immediately after seeding (depending on moisture) can be applied providing it contains no effluent or dairy washings.

Method 4, Complete sward destruction

Where the old sward is very weedy, and a complete re seed is required, spray with glyphosate pre or post-harvest/grazing to get a total kill off of all vegetation, and direct drill with a new seeds mixture.

Following grazing

We prefer to graze tight, harrow/rake/roll as necessary after grazing, to disperse dung pats, then direct drill, and then leave up to a week before spraying off, or certainly before the new seeds germinate. This procedure helps get a good regrowth going to take the chemical, without affecting seed germination.

Check the pH of the ground prior to seeding and apply lime as necessary to get the ideal pH of 6.5, especially with clover.

A light to medium coat of slurry immediately after seeding (depending on moisture) can be applied providing it contains no effluent or dairy washings.

After silage

Cut the silage first rather than apply glyphosate pre harvest, at the recommended 5 days, as this prevents any wheeling's from the sprayer appearing in subsequent crop, also Glyphosate seems more effective on less volume of grass. By delaying drilling up to a week after cutting, regrowth will have started, and then drill, and delay spray application up to another week, at least before the new seed germinates. This has the effect of giving another week's regrowth to take the chemical.

The downside of the above techniques is that the grass damaged at the disc row during drilling, is sometimes not adequately controlled by the glyphosate.

Check the pH of the ground prior to seeding and apply lime as necessary to get the ideal pH of 6.5, especially with clover.

A light to medium coat of slurry immediately after seeding (depending on moisture) can be applied providing it contains no effluent or dairy washings.

Method 5, Older leys, rough permanent grass old, worn-out pastures

These need to be approached with care. Although Glyphosate deactivates in contact with soil, there is a problem with toxic phenol and acetic acids being released by old decaying sprayed off vegetation, so if there is a thick mat or subsurface mat of roots and fibre, and inevitably the seed is placed near this mat, then germination problems can occur due to localized acidic soil. This is worse in wet anaerobic conditions, before during or after seeding. The problem with direct drilling into sprayed off grass or anything else that has a large root mat is that it is always a big gamble depending on the weather, especially after you have drilled, which is why some people say it's successful and others don't. An analogy is that silage (decaying grass) made in wet conditions is always more acidic when opened.

In a heavy mat situation, waiting for long enough for all the plants to die completely after spraying is the only way to guarantee success with direct drilling on old, matted pastures, otherwise you need to either shallow cultivate and roll, to increase the oxygen levels or if you're feeling lucky take a gamble, that the sward won't lie wet after drilling. If you had a thick mat of decaying vegetation and spun bean seeds on the surface and then ploughed them in, you would get the same results. So, either spray off in spring and drill in autumn, after a lime application, and probably another lower rate spray, predrilling, or less production can be lost by spraying off in autumn, applying lime, and drilling in early spring, when a further lower rate spray is usually necessary.

In a lower more marginal mat situation, the application of lime alone can help neutralize the effects of the acidic decomposition, but like all seeding techniques depend on moisture and ground heat. In this situation, we recommend the delayed glyphosate application techniques discussed above, that is to delay glyphosate application until after seeds have been planted, but before they germinate, so that the seeds get maximum exposure to germination, establishment, and deeper rooting before the acidic effects of the decaying plant material come to bear.

A few test sites dug with a spade; will help you decide on the subsurface mat/thatch problems that might be present.

Direct drilling after sprayed off temporary or more open leys isn't usually a problem as the root matt isn't big enough to damage seedlings with its acids and phenols.

In all the above cases use a vigorous quick establishing grass seed mixture up to 35kg/ha.

There is no doubt that a blend of 50% Perennial Hybrid (tet), 25% Intermediate tet and 25% diploid works best. These are mostly larger seeds with greater energy reserves for coping with adverse situations. Italian ryegrass swards can easily be re-established at the end of their allotted production cycle, by re drilling typically after the third season.

Sowing into ploughed, pre cultivated and looser seedbeds.

By running the packer in the highest position, and therefore least pressure on the coulters, seed can be laid on top, or shallow in ploughed or pre cultivated seedbeds.

The Guttler press wheels will make a nice job of firming the seed into the soil, without the risk of capping, and no further rolling need take place if required.

Sowing into cereal stubble

It is recommended to run at a slight angle to the existing stubble, approximately 10 to 15 degrees, so that the discs are never constantly running on a row of stubble and are therefore running in and out of the existing stubble rows.

EU DECLARATION OF CONFORMITY

Declaration No. 300G1

We, the undersigned

Moore Unidrill (Manufacturing) Ltd
Randalls Farm, Scottlethorpe Road,
Edenham, Bourne, Lincs. PE10 0LN

Declare under our sole responsibility that the following apparatus:

Name: MOORE UNIDRILL
Model: 300
Type: GRASSLAND
Serial number:

Is in conformity with the following relevant EC legislation:

2006/42/EC

Based on the following Harmonised standards:

EN12100-2:1998
BS EN ISO 14121-1:2007
EN 982:1996+A1:2008

And Non-Harmonised standard:

BS ISO 4254-9:2008

Risk Analysis was carried out using the following standard:

BS EN ISO 14121-1:2007

We, the undersigned, undertake to transmit, in response to a reasoned request by national authorities, relevant technical information for the machinery.

Name and position of person binding the manufacturer:



Signature _____

Name Jonathan Whyles
Function Operations Director
Location Randalls Farm, Scottlethorpe Road, Edenham, Bourne, Lincs. PE10 0LN
Date of issue 26/02/21

OPERATORS MANUAL



3.0 METRE TRAILED MODEL

APPENDIX TO MOORE UNIDRILL MOUNTED 300G INSTRUCTIONS



MOORE UNIDRILL (MANUFACTURING) LTD

RANDALLS FARM, SCOTTLETHORPE ROAD, EDENHAM, BOURNE, LINCS, PE10 0LN

Foreword

This appendix is to be read and observed in addition to the mounted seed drill 300G instructions.

Trailed Drill Supplement

Hydraulic drive is standard on all trailed drills. Operating instructions on this can be found in the mounted section (page 20). All coulters and disc assemblies are also the same as the mounted model. The trailed machine is 250kg heavier than the standard mounted drill.

To ensure the drill runs level, adjust the top link on the drawbar so that the chassis runs level and both rows of discs are engaged in the ground at the correct depth. To assist there are 2 swingometer arrows on each side of the packer to help ensure the chassis is level.

The transport ram locks should be swung back whilst in work as pictured below. When the locks are in transport position, they are shorter than the ram stroke, acting as a safety measure.



Electro-Magnetic Compatibility (EMC)

This product complies with Council Directive 89/336/EEC when installed and used in accordance with the relevant instructions.



Service and Technical Support

PLEASE CONTACT YOUR NEAREST DISTRIBUTOR

If unknown then fax: 44 (0) 1453 733322

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Our policy is one of continuous improvement and the information in this document is subject to change without notice. Check the software reference matches that displayed by the instrument.

Document number

S/DC/500-10-266 : Issue 2d : 9/8/02

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User Guide

MFDC 100 Multi-Function Drill Control

Calibration and Operation

Software Ref: WZ 304-001 rev.01

Contents

Contents	2
1. Overview	4
2. The Control Switches	5
Channel Indicator	6
Normal Display Mode	6
Programming Modes	6
Units	6
3. Forward Speed	7
Display Forward Speed	7
Forward Speed Alarm	7
Speed Sensor Calibration	7
Manual Speed Calibration	8
‘Autocal’	9
4. Area Total / Implement Width	10
Display Area Total	10
Reset Totals	10
Set Implement Width	11
5. Tramlining	12
Manually advance the bout number	12
Hold the bout number	12
Symmetric Tramlining Sequence	13
Asymmetric Left Tramlining Sequence	14
Asymmetric Right Tramlining Sequence	15
10 Bout Tramlining Sequence	16
18 Bout Tramlining Sequence	17
Selecting the Tramline Sequence	18
Setting the Tramline Bout	18
6. Fan Speed / Speed Alarms	19
Display Fan Speed	19
Fan Speed Alarms	19
Set Low Fan Speed Alarm	19
Set High Fan Speed Alarm	20

7. Seed Distribution Shaft Speed	21
Display Shaft Speed	21
Distribution Shaft Speed Alarm	21
Set Alarm Speed for Distribution Shaft	21
Half Width Drilling – Disabling the Shaft Speed Alarm	22
Disabling the Distribution Shaft Alarm	22
Alarm Delay Time	23
Set Alarm Delay Time	23
8. Hopper Level	24
Enable / Disable Hopper Level Alarm	24
9. Summary of Programme Modes 1 – 3	25
Select Metric/Imperial Units	26

1. Overview

The *Multi-function Drill Control* monitors the operation and controls the tramlining function of both conventional and pneumatic type seed drills.

The instrument has an illuminated 4 digit display with 6 display functions and alarm functions for forward speed, fan rpm and seed distribution shaft rpm. The speed and area functions can be displayed in either metric or imperial units.

The instrument indicates;

- Forward Speed (plus low speed alarm)
- Part Area and Total Area worked
- The current bout number and tramline bouts for the selected tramlining sequence.
- Fan rpm (plus low/high speed alarm)
- Seed Distribution Shaft rpm (plus low speed alarm)
- Hopper level low

The tramlining function is the priority display. The instrument will default to this channel display 10 seconds after selecting another display function (with the exception of displaying area)

It has two memory registers (Total 1 and Total 2) to record area worked. The area is accumulated to both memory registers. Area totals and all calibration data are automatically stored in memory when the instrument is powered off.

The instrument must be initially calibrated to suit the implement being controlled. Three programme modes allow the default settings to be altered as required. Most of these settings do not need to be accessed in normal use.

2. The Control Switches

There are three active switches on the front panel used individually or in combination to programme, set/reset or select a function. The two small outer buttons have no function.

The diagram shows the MFDC 100 control panel with the following callouts:

- Current Bout No.**: Points to the left digit of the display (2).
- Preset Tramlining Bout**: Points to the right digit of the display (5).
- Channel Indicator**: Points to the six channel icons below the display.
- Not used**: Points to the two small outer buttons on the left and right of the main controls.
- Programme Key**: Points to the **+1** button.
- Select Channel**: Points to the central button with a down arrow.
- STOP Hold 0**: Points to the button on the right of the main controls.

Programme Key instructions:


1. Select the channel then **PRESS +1** to switch between Area Total 1 and 2.
- OR:
2. Select the channel then **PRESS +1** to manually advance the Bout Number.
- OR:
3. **HOLD** continuously to select the programming mode. (Normal Mode is resumed when the button is released).

Select Channel instructions:


PRESS to override automatic advance of bout number if drill is lifted, (press again to resume)
OR:
HOLD to reset currently displayed Area Total


Channel	Icon	Function
Channel 1		Forward Speed
Channel 2		Area Total 1 or 2
Channel 3		Current/Tramline Bout
Channel 4		Fan RPM
Channel 5		Seed Shaft RPM
Channel 6		Hopper Level Low

Channel Indicator

The  indicator indicates the channel to which the information on the display relates.

Normal Display Mode

The instrument has a normal display mode displaying six work functions. Select a channel by pressing the  button once or more.




When the drill is moving, the selected channel is displayed for 10 seconds before defaulting back to the tramline bout display ( channel). When the drill is stationary the instrument will flash between the forward speed and the Tramline channel. If the tramline option is turned off, the instrument will simply default to the Forward Speed channel.

Programming Modes

There are 3 programming modes with various calibration factors and default settings.

Many of these settings are made on installation and do not normally need to be changed unless the instrument is switched onto a different drill. These settings are appended to the back of this manual. The operator does not normally need to refer to them.

Units

The instrument can be set to display metric or imperial units. To see which is selected, select either the forward speed () channel or the area channel () , then press and hold the  button.

Either the top row of horizontal segments or the bottom row of horizontal segments will briefly display, indicating the units selected.

NOTE: 'MET' and 'IMP' are printed on the instrument front panel on most instrument variants.

3. Forward Speed

Display Forward Speed



Select the  channel.

Forward Speed displays for 10 seconds before returning to the tramline display.



Figure 1: Display Forward Speed

Forward Speed Alarm

If you stop while the drill is in work or move at a speed less than 2.6 km/hr (1.6 miles/hr), then the instrument will beep twice, and the display will alternate between the currently selected channel and the forward speed channel.

This continues until the speed is increased above the 2.6 km/hr threshold.

NOTE: The forward speed alarm can be disabled in programme mode 2.

Speed Sensor Calibration

The forward speed sensor is magnetically operated and senses the land wheel rotation. In order to display the correct speed and accumulate area correctly, the instrument must be programmed with the correct Speed Sensor Factor (SSF). This is the distance travelled between two signal pulses received from the sensor.

The S.S.F. can be calculated theoretically and then manually programmed, or the instrument can automatically calculate it via the "Autocal" function.

Manual Speed Calibration

The theoretical calibration figure equals the circumference of the land wheel (diameter x 3.142) either in inches if the instrument is set for imperial units, or in metres if it is set for metric units.

Default = 2.000m (78.78 inches)

NOTE: An 'Autocal' is more accurate in field conditions





1. Select the  channel.
2. HOLD **+1** to enter programme mode 1. The top/bottom horizontal segments indicating metric/imperial units are displayed briefly before the calibration factor appears. Continue holding the button and...
3. PRESS  to select the digit or decimal point to change.
4. HOLD  to change the selected digit (or move the decimal point).
5. RELEASE  to select the next digit and repeat as above, otherwise simply release both buttons. The instrument will then return to the normal display mode.




Figure 2: Enter Cal Mode 1 (S.S.F)



Figure 3: Change S.S.F.

‘Autocal’

For maximum accuracy, perform an auto-calibration in field conditions.

1. Set two markers at 100 metres apart (328 feet). Choose a convenient reference point on the tractor/implement and position this point opposite the first marker.
2. Select the  channel.
3. HOLD **+1** until the calibration factor is displayed.

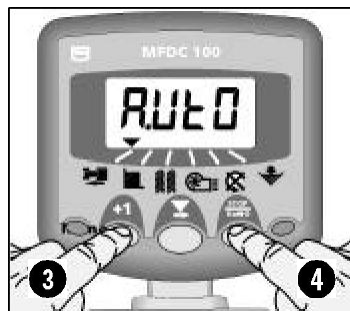

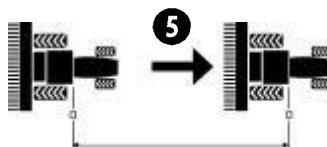


Figure 4: Start ‘Autocal’

4. Continue holding this button and press . *The display flashes ‘Auto’ ready for calibration.*
5. Drive the vehicle until the chosen reference point on the tractor/implement is opposite the second marker.



100m (328ft)

Figure 5: ‘Autocal’ distance


6. Press the  button to complete the Autocal routine (fig. 6). *The calibration factor is automatically calculated and stored in memory.*



Figure 6: Stop ‘Autocal’

4. Area Total / Implement Width

The area is derived from the forward speed and the programmed implement width and is accumulated to whichever total is selected on the display – total 1 or total 2.

Area will only accumulate while the drill is in work, i.e. forward speed is being registered.


The two separate area totals can be independently reset to zero.



Figure 7: Display Area Total

Display Area Total




1. Select the  channel.
2. Press **+1** to cycle between the two area totals.

The display will then show '**tot.1**' or '**tot.2**' before displaying the area accumulated since that total was last reset.



Figure 8: Select Total 1 or Total 2

Reset Totals

1. Select the  channel.
2. Press **+1** to cycle between the two area totals.
3. Hold **STOP** for 5 seconds to zero that total.

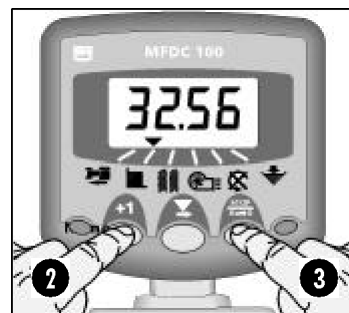


Figure 9: Reset Total

Set Implement Width

In order for the instrument to accumulate area correctly, the implement working width must be programmed. The units are either in inches if the instrument is set for imperial units, or in metres if it is set for metric units.





1. Select the  channel.
2. HOLD **+1** to enter programme mode 1. The top/bottom horizontal segments indicating metric/imperial units are displayed briefly before the calibration factor appears. Continue holding the button and...
3. PRESS  to select the digit or decimal point to change.
4. HOLD  to change the selected digit (or move the decimal point).
5. RELEASE  to select the next digit and repeat as above, otherwise simply release both buttons. The instrument will then return to the normal display mode.




Figure 10: View Implement Width



Figure 11: Set Implement Width

5. Tramlining

The display defaults to the  channel after 10 seconds (unless the Area Total was selected).

There are five systems of tramlining – symmetric, asymmetric left, asymmetric right, 10 bout and 18 bout. The tramline bout is programmable from 1 to 15 in symmetric, asymmetric left and asymmetric right sequences.

Selection of asymmetric tramlining is denoted by a decimal point on the display between the current bout number on the left and the tramline bout number on the right. Left or right asymmetric tramlining is selected in the programming mode.

NOTE: There is an option in the programme mode to disable the tramline function altogether.

Manually advance the bout number

Press **+1** to advance the current bout number by 1.

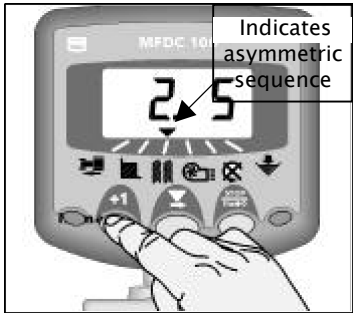


Figure 12: Advance bout number

Hold the bout number

Press **STOP Ha→0** to 'hold' the current bout when the drill goes out of work.

The display will flash 'STOP'.

Press **STOP Ha→0** again to resume the normal bout sequence.

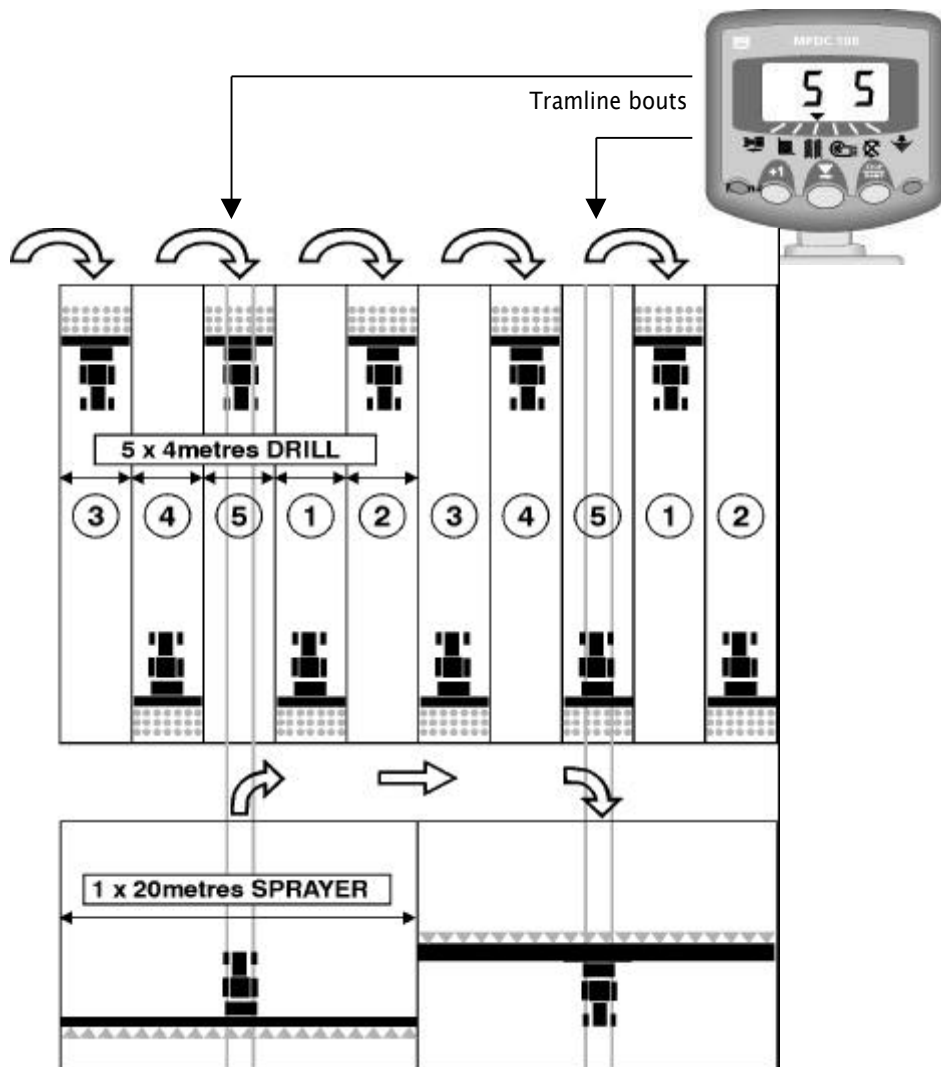


Figure 13: Hold bout number

Symmetric Tramlining Sequence

2+2 seed spouts are closed during the tramline bout only.

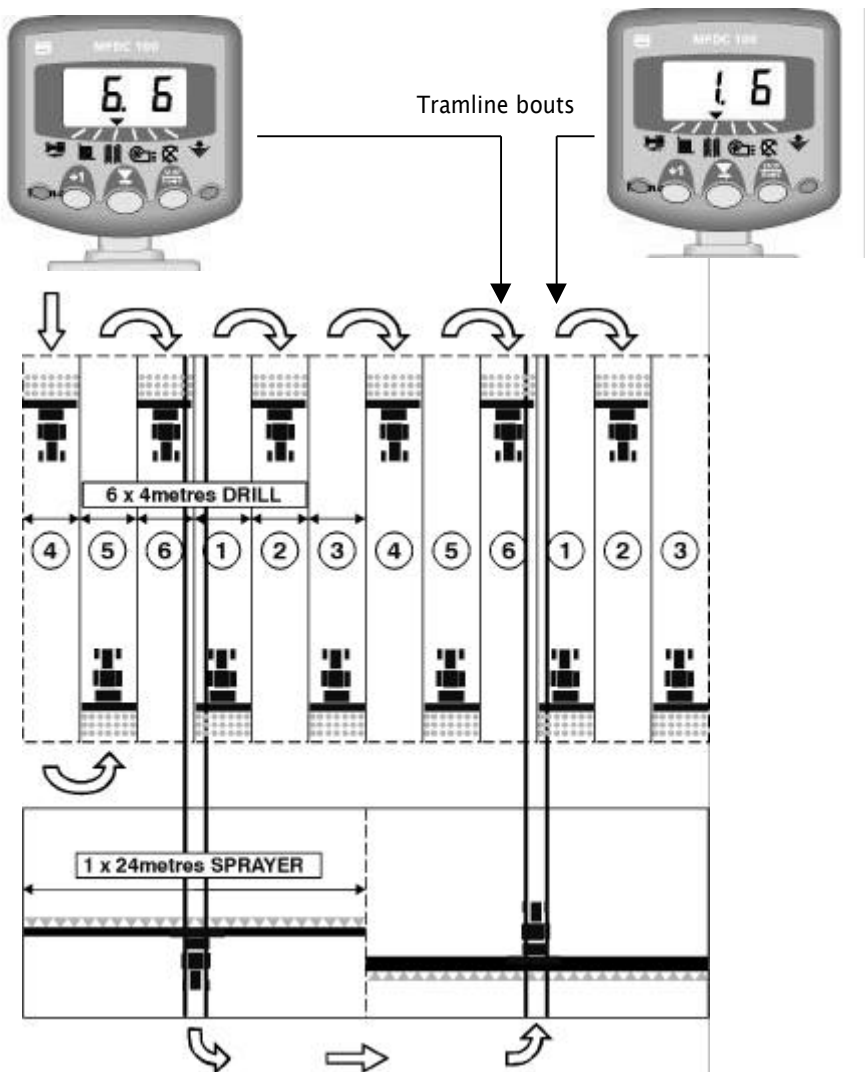
The instrument will beep once at the beginning of the tramline bout, and the display will continue flashing for the duration of the bout.



Asymmetric Left Tramlining Sequence

Two seed spouts are closed on the **left hand side** of the drill on the tramline bouts.

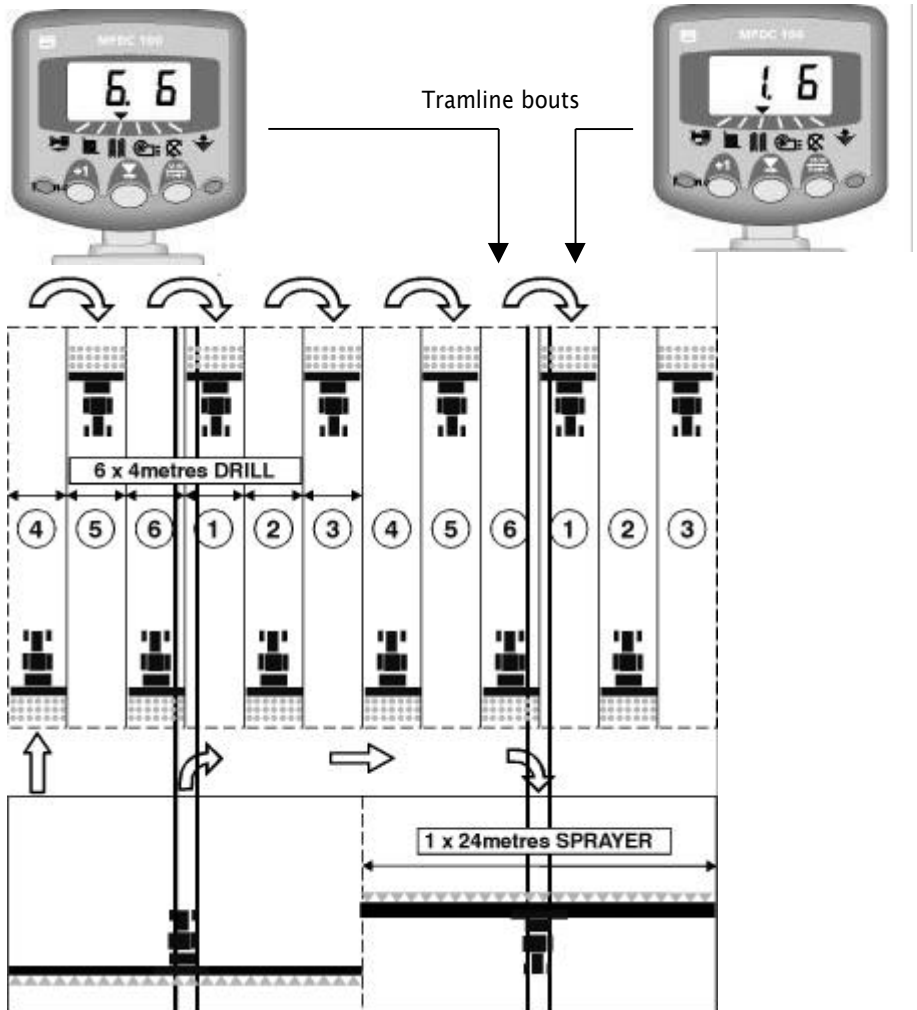
The instrument will beep once at the beginning of each tramline bout, and the display will continue flashing for the duration of the bout.



Asymmetric Right Tramlining Sequence

Two seed spouts are closed on the **right hand side** of the drill on the tramline bouts.

The instrument will beep once at the beginning of each tramline bout, and the display will continue flashing for the duration of the bout.

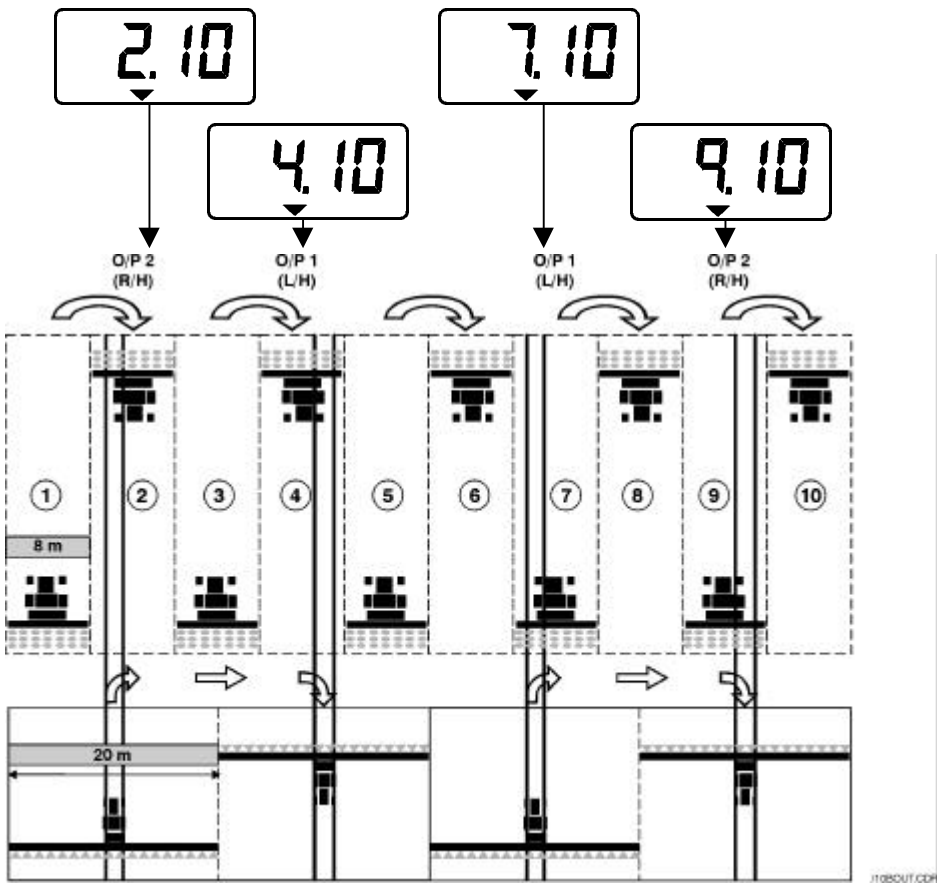


10 Bout Tramlining Sequence

For use with 4 metre drill/10 metre sprayer, or 8 metre drill/20 metre sprayer combinations. (2 x 2 left hand seed spouts are closed on bouts 4 and 7, and 2 x 2 right hand seed spouts closed on bouts 2 and 9). Starting on bout 1 requires turning **RIGHT** at the end of the first bout.

NOTE: To turn LEFT at the end of the first bout, advance the bout number to 6 before commencing drilling.

The instrument will beep once at the beginning of each tramline bout and the display will flash for the duration of the tramline bout.

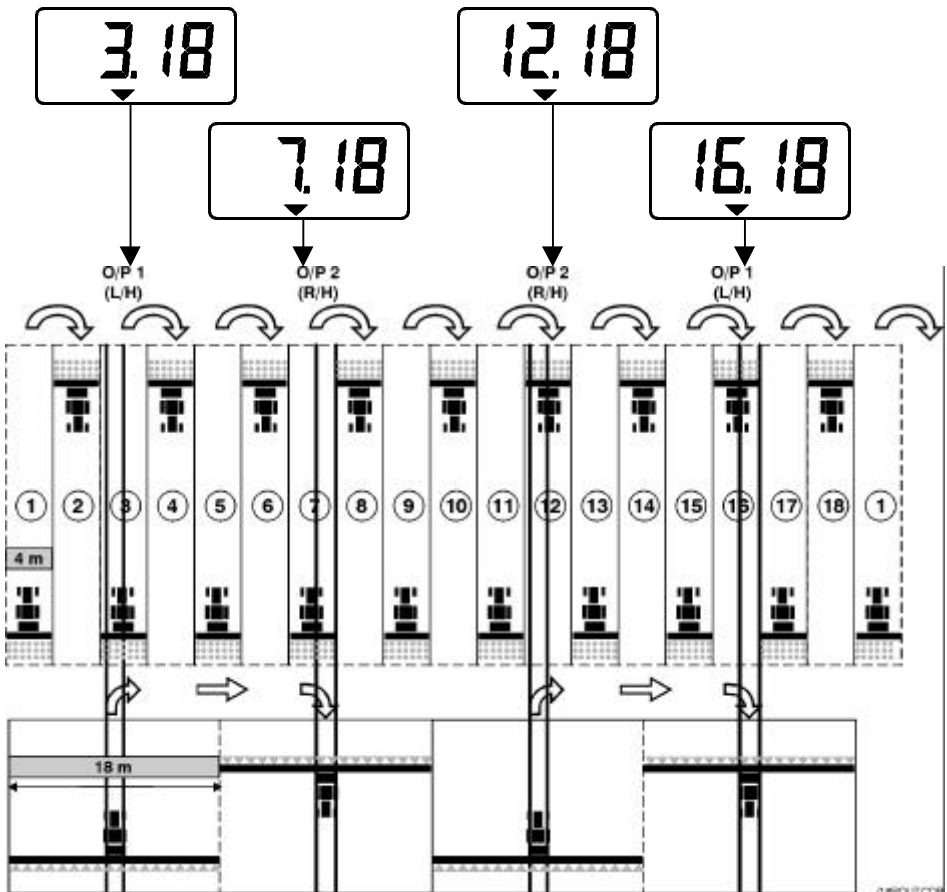


18 Bout Tramlining Sequence

For use with a 4 metre drill and an 18 metre sprayer. (2 x 2 left hand seed spouts are closed on bouts 3 and 16, and 2 x 2 right hand seed spouts closed on bouts 7 and 12). Starting on bout 1 requires turning **RIGHT** at the end of the first bout.

NOTE: To turn LEFT at the end of the first bout, advance the bout number to 10 before commencing drilling.

The instrument will beep once at the beginning of each tramline bout and the display will flash for the duration of the tramline bout.



Selecting the Tramline Sequence






1. Select the  channel.
2. Hold **+1** to enter programme mode 1.
After 3 seconds the first two digits flash, indicating the tramline sequence currently set:-
 'SY' = Symmetric
 'AL' = Asymmetric Left
 'Ar' = Asymmetric Right
 'AS' = Special Asymmetric sequences e.g.
 10 bout and 18 bout.
3. Continue holding the **+1** button and press and HOLD the  button to select the required sequence. 



Figure 14: Tramline Sequence

Setting the Tramline Bout

4. PRESS and RELEASE the  button to toggle between the tramline sequence and tramline bout number display.
The 3rd and 4th digits flash indicating the tramline bout number currently set.
5. PRESS and HOLD the  button to cycle the tramline bout from 1 to 15.
 NOTE: If either asymmetric left ('AL') or asymmetric right ('Ar') sequences are selected, the tramline output is also switched on for the bout following the target bout (i.e. bout 1).
 If the special asymmetric sequence ('AS') is selected, the only options for the tramline bout number are 10 and 18.

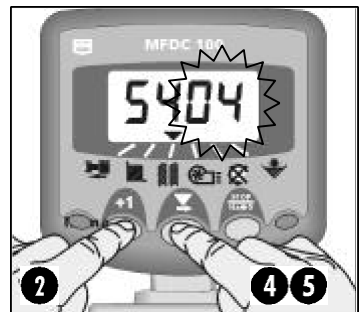


Figure 15: Tramline Bout Number

6. Fan Speed / Speed Alarms

Display Fan Speed



Select the  channel.

Fan Speed displays for 10 seconds before returning to the tramline display.



Figure 16: Display Fan Speed

Fan Speed Alarms

There is a programmable high speed alarm and a programmable low speed alarm. An alarm condition causes the instrument to default to the fan speed channel, sound 5 beeps and flash the actual fan speed. Cancel the alarm by restoring the fan speed within the programmed limits.

NOTE: The alarm is inhibited if the forward speed is less than 2 km/hr.

Defaults Alarm Thresholds : Low speed = 2700 rpm, High speed = 4500 rpm

Set Low Fan Speed Alarm



1. Select the  channel.
2. Hold **+1** to enter programme mode 1. The alarm threshold is displayed after 3 seconds. Continue holding the button and...
3. PRESS  to select the digit or decimal point to change.



Figure 17: Low speed alarm threshold







4. HOLD  to change the selected digit (or move the decimal point).
5. RELEASE  to select the next digit and repeat as above, otherwise simply release both buttons. The instrument will then return to the normal display mode.



Figure 18: Set low speed alarm threshold

Set High Fan Speed Alarm

1. Press and hold the **+1** button whilst switching the instrument on, to enter programme mode 2.
2. Press **+1** to select the  channel.
3. PRESS  to select the digit or decimal point to change.
4. HOLD  to change the selected digit (or move the decimal point).
5. RELEASE  to select the next digit and repeat as above, otherwise switch the instrument off and then back on again to resume the normal display mode.

7. Seed Distribution Shaft Speed

Display Shaft Speed




Select the  channel.

Shaft Speed displays for 10 seconds before returning to the tramline display.



Figure 19: Distribution Shaft speed



Distribution Shaft Speed Alarm



With the default alarm setting, if the seed distribution shaft stops for more than 40 seconds the instrument will sound 5 beeps and will default to the  channel from the current channel selected. The audible alarm will sound every 30 seconds until the alarm condition is resolved.

NOTE: The alarm can be cancelled - either by restoring shaft rotation, or switching the instrument off and then on again.

The alarm is inhibited if forward speed is less than 2 km/hr.



Set Alarm Speed for Distribution Shaft

1. Select the  channel.
2. Hold **+1** to enter programme mode 1.
The alarm threshold is displayed after 3 seconds. Continue holding the button and...
3. PRESS  to select the digit to change.

4. HOLD  to change the selected digit.
5. RELEASE  to select the next digit and repeat as above, otherwise simply release both buttons. The instrument will then return to the normal display mode.


Half Width Drilling – Disabling the Shaft Speed Alarm

Some drills have a half width facility. Disengaging the metering shaft will result in the shaft speed alarm being triggered. In this case you must set the instrument to disable the metering shaft alarm, and also to accumulate area based on half width.

After the alarm has triggered, the instrument defaults to the shaft speed channel . At this time simply press and hold the  button for 2 seconds. The display will show "HaLF", indicating that the shaft alarm will be ignored and the area accumulation reduced by 50%.

The instrument will revert back to normal operation when either a shaft speed signal is received (i.e. the seed shaft has been mechanically re-engaged for full width operation), or the instrument is turned off and on again.

Disabling the Distribution Shaft Alarm

Alternatively, you can turn off the alarm by pressing and holding the  button for 5 seconds with the shaft speed channel selected. The display will then show 'OFF' when this channel is selected. The alarm function will stay off until the instrument is switched off and back on again.

Alarm Delay Time





Some crops – notably oilseed rape (canola) are drilled at very low rates so the seed shaft runs extremely slowly and the instrument may sense that the shaft has actually stopped, thus triggering the shaft speed alarm. The programmable delay time can prevent the alarm being triggered needlessly in such a situation.

When drilling larger seed/at higher rates, a long time delay is equally undesirable. In this case a shorter time delay can be programmed.

Default delay time = 40 seconds

Minimum delay time = 5 seconds

Set Alarm Delay Time

1. Press and hold the **+1** button whilst switching the instrument on, to enter programme mode 2.
2. Press **+1** to select the  channel.
3. PRESS  to select the digit to change.
4. HOLD  to change the selected digit.
5. RELEASE  to select the next digit and repeat as above, otherwise switch the instrument off and then back on again to resume the normal display mode.

8. Hopper Level





When the seed level drops below the sensor fitted in the side of the hopper, the instrument defaults to this channel and sounds 5 beeps



Figure 20: Hopper Low Alarm

Enable / Disable Hopper Level Alarm

1. Select the  channel.
2. Hold **+1** to enter programme mode 1.
Continue holding the button and...
3. PRESS  to select 0 (Off) / 1 (On).

The display will stay blank on this channel when the alarm is disabled.

4. Release both buttons. The instrument will then return to the normal display mode.

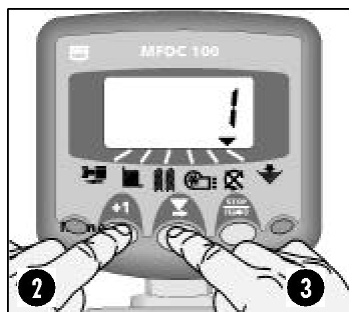




Figure 21: Disable Alarm

9. Summary of Programme Modes 1 – 3

Most settings do not need to be accessed during normal operation, unless perhaps the instrument is transferred to another tractor/implement. Default values shown in *[brackets]*.

	Mode 1	Mode 2	Mode 3
Mode Entry	From normal display mode, select channel and hold +1 button continuously	Press and hold +1 button while switching instrument on	Press and hold STOP button while switching instrument on
Channel Selection	As Above	Press +1 button	Press STOP button
Channel 1	Speed Sensor Factor <i>[2.000]</i> see page 8	Forward Speed Alarm On (1) / Off (0) <i>[1]</i>	No function
Channel 2	Implement Width <i>[2m]</i> see page 11	Metric/Imperial Selection <i>[Metric]</i> see page 26	Display Grand Total Area (non-resettable)
Channel 3	Tramline Sequence /Target Bout <i>[SY04]</i> see page 18	Tramline Option On (1) / Off (0) <i>[1]</i>	Tramline Option On (1) / Off (0) <i>[1]</i>
Channel 4	Low Fan Speed Alarm <i>[2700rpm]</i> see page 19	High Fan Speed Alarm <i>[4500 rpm]</i> see page 20	Fan speed Sensor – pulses per rev. Set 0 to inhibit fan speed channel <i>[1.000]</i>
Channel 5	Distribution Shaft – Alarm Speed <i>[0]</i> see page 22	Distribution Shaft – Alarm Delay <i>[40 sec]</i> see page 23	Dist. Shaft Sensor – pulses per rev. Set 0 to inhibit Shaft Speed channel <i>[1.000]</i>
Channel 6	Hopper Level Alarm On (1) / Off (0) <i>[1]</i> see page 24	No function	No function

Select Metric/Imperial Units

- 1. Press and hold the **+1** button whilst switching the instrument on, to enter programme mode 2.
- 2. Press **+1** to select the  channel.
- 3. PRESS  to switch between metric and imperial.

The top row of horizontal segments indicates metric units are selected and the bottom row indicates imperial units are selected.

- 4. Switch the instrument off and then back on again to resume the normal display mode.

Function	Metric	Imperial
Fwd Speed	mph	kph
Area	Ha	acres
Width/S.S.F.	metres	inches

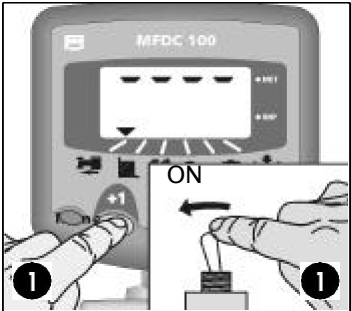


Figure 22: Enter Cal Mode 2

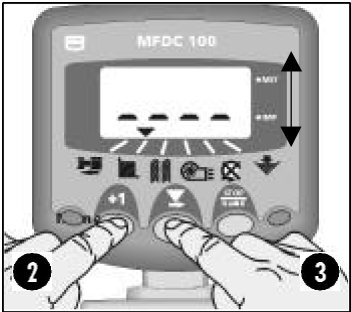


Figure 23: Change Units

Document History

Issue 2b	17/7/02	Amendments to para. 1, p.6 and para.2, p.22
Issue 2c:	24/7/02	Ref: S/Ware Ver WZ304-001 rev.1 p.10, para. 2; p.21 – Dist. Shaft Speed Alarm p.22 – Half Width accumulation/Alarm Delay Time
Issue 2d	9/8/02	p.22 – Half Width accumulation/Alarm Delay Time Reworded para.2.