

STAR

OPERATORS
MANUAL
USA

IMPORTANT NOTICE TO OPERATORS

YOU are the person responsible for the SAFE and SUCCESSFUL operation of this machine.

You MUST:

- READ this users guide carefully
- UNDERSTAND the guide BEFORE using the machine
- FOLLOW the instructions in the guide about:
PREPARATION
OPERATION
SAFETY
MAINTENANCE
REPAIR
- USE YOUR COMMON SENSE if this machine does not conform to descriptions in the guide.
- CHECK periodically that THE PERFORMANCE YOU EXPECT IS BEING ACHIEVED. In adverse conditions you should check performance more frequently.
- IF EXPECTED PERFORMANCE IS NOT BEING ACHIEVED, it is your responsibility to STOP THE MACHINE.
The suppliers of this machine cannot be held responsible.
- SEEK HELP on mechanical problems from your Stanhay Webb dealer.

SAFETY

1. *When transporting the machine on public roads, it is the responsibility of the operator to ensure prevailing Road Traffic Regulations are strictly adhered to.*
2. *The machine is designed for one-man operation, and to comply with Safety Regulations, it is understood that the operator is in the tractor cab when the machine is in motion.*

RECORD DETAILS OF YOUR MACHINE IN THE SPACE PROVIDED BELOW

Model: STAR

Serial Number:

Date Purchased:

Supplier:

FOR ALL ENQUIRIES PLEASE CONTACT:

Stanhay Webb Ltd

Houghton Road, Grantham, Lincs. NG31 6JE England

Telephone: (01476) 515500 Fax: (01476) 515501

Telex: 377861 Intab Grantham

Part No: 6447155 - Issue 4/02 USA

Risks can be reduced by:

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

EMERGENCY ACTION IN THE EVENT OF AN ACCIDENT

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

Further advice

For advice and information contact your local electricity supply company. Ask them for the latest edition of their booklet *Safe use of electricity in farming and horticulture*. (FEC 2100: 3rd edition 1992)

Local HSE offices will provide more information. The telephone number is in the phone book under Health and Safety Executive. Further copies of this information sheet may be obtained from the Crop Production National Interest Group (tel: 0602 470712)

Further reading

HSE *Avoidance on danger from overhead electrical lines GS 6 (rev)* HMSO 1991 ISBN 0 11 885568 5

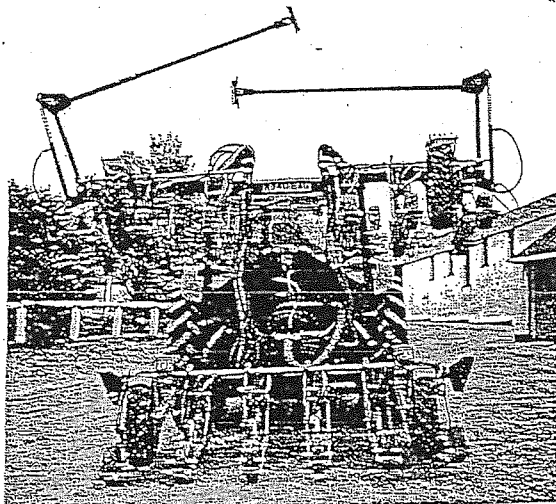
Farm Electric *The safe use of irrigators and slurry guns near overhead electric power lines* Electricity Association Technology Ltd

HSC *Memorandum of guidance on the Electricity at Work Regulations 1989* HMSO 1989 ISBN 0 11 8839632

HSC *Management of health and safety at work* HMSO 1992 011 886330 4

An HSE video called *Shock horror* is available for purchase or hire contact CFL Vision, PO Box 35, Wetherby LS23 7EX (tel: 0937 541010).

This publication may be freely reproduced, except for advertising, endorsement or sales purposes. The information it contains is current at 6/93. Please acknowledge the source as HSE.



STANHAY STAR
INSTRUCTION MANUAL

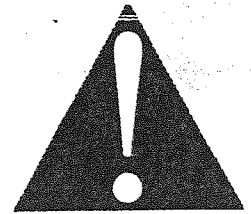
Contents

Fan Impeller Inspection -- IMPORTANT	1
To Inspect Fan Impeller	2
Setting Up For Work - Preliminary Checks	3
- Seed Discs- checking, fitting and care	4
- Preparation For Work -- in the yard	5-6
Unit Setting and Calibration	7-8
Field Operation	9
STAR Coulters (Shoes) -- Recommendations	10
Coulter Fitting Instructions - 2 and 3 line	11
- Single line	12
Fitting Coulter Rib Packers	13
Preparing Metering Units	14-15
Unit Maintenance	16
Seed Discs	17
Setting Seed Spacing	18
Setting Air Supply	19
Belt Tension -- Fans	20
Vacuum Gallery Block	21
Fault Finding Guide	22-23
Seed Spacing Charts	24-25
Seed Spacing/Population Calculations	26
Application Rates	27 - 81
Operator Check List	82
Seed Setting Guides	84
General Warranty	
EC Declaration of Conformity	

SAFETY

INTRODUCTION

Stanhay follows the general safety standards specified by the American Society of Agricultural Engineers (ASAE) and the Occupational Safety and Health Administration (OSHA). Anyone who will be operating and/or maintaining a Stanhay precision seeder must read and clearly understand all safety, preparation, operating and maintenance information presented in this manual.



Do not operate or allow anyone else to operate this equipment until such information has been reviewed. Annually review this information before the season start-up. Call your Stanhay dealer or distributor if you need assistance, information or additional copies of manuals.

Make these periodic reviews or **SAFETY** and **OPERATION** a standard practice for all of your equipment. Be aware that an untrained operator is unqualified to operate this machine.

A sign-off form is provided (Sheet S6) for your record keeping to show that all personnel who will be working with the equipment have read and understand the information in the operator's manual and have been instructed in the operation of the equipment.

SAFETY IS YOUR RESPONSIBILITY

YOU are responsible for the **SAFE** operation and maintenance of your Stanhay precision seeder. **YOU** must ensure that you and anyone else who is going to operate, maintain or work around the seeder be familiar with the operating and maintenance procedures and related **SAFETY** information contained in this manual.

Remember, **YOU** are the key to safety. Good safety practices not only protect you but also the people around you. Make these practices a working part of your safety program. Be careful that **EVERYONE** operating this equipment is familiar with recommended operating and maintenance procedures and follows all the safety precautions. Most accidents can be prevented. Do not risk injury or death by ignoring good safety practice.

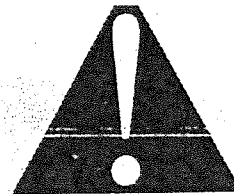
- Stanhay precision seeder owners must give **OPERATING INSTRUCTIONS** to operators or employees before allowing them to operate the machine, and at least **ANNUALLY** thereafter per OSHA (Occupational Safety and Health Administration) regulation 1928.57.
- The most important safety device on this equipment is a **SAFE OPERATOR**. It is the operator's responsibility to read and understand **ALL** safety and operating instructions in the manual and to follow these. All accidents can be avoided.
- A person who has not read and understood all operating and safety instructions is not qualified to operate the machine. An untrained operator exposes himself and bystanders to possible serious injury or death.
- Do not modify the equipment. Unauthorized modification may impair the function and/or safety and could affect the life of the equipment.

Think **SAFETY!** Work **SAFELY!**

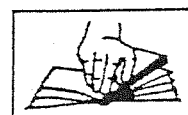
READ and FOLLOW ALL SAFETY INSTRUCTIONS

GENERAL SAFETY

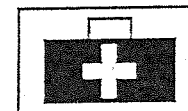
1. Read and understand the Operators manual and all safety signs before operating, maintaining, adjusting or unplugging the precision seeder.



2. Have a first aid kit available for use should the need arise and know how to use it.



3. Have a fire extinguisher available for use should the need arise and know how to use it.

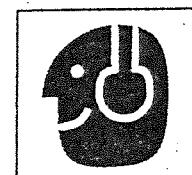


4. Wear the appropriate protective gear.
This list includes but is not limited to:

- A hard hat
- Protective clothing
- Heavy gloves
- Respirator mask
- Protective shoes with slip resistant soles
- Protective goggles, glasses or face shield



5. Wear suitable ear protection for prolonged exposure to excessive noise.



6. Install and secure all guards before starting.

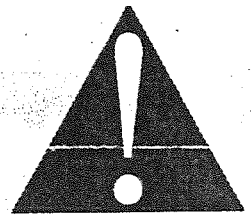
7. Clear the area of people, especially small children before starting.

8. Do not allow riders.

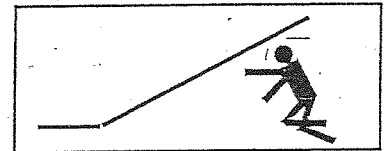
9. Place all controls in neutral stop tractor engine, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.

10. Review safety related items annually with all personnel who will be operating or maintaining the seeder.

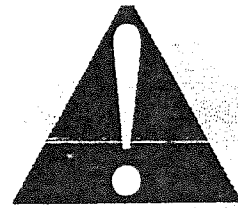
OPERATING SAFETY



1. Read and understand the operator's manual and all safety signs before preparing, operating, servicing, adjusting, repairing or unplugging.
2. Install and secure all guards and shields before starting or operating.
3. Where tractor power take-off is used, do not operate without all driveline, tractor and equipment shields in place; drivelines securely attached at both ends, and driveline shields that turn freely on driveline.
4. Clear the area of bystanders, especially small children before starting.
5. Never start or operate machine unless sitting on tractor seat.
6. Place all tractor and machine controls in neutral before starting.
7. Stay away from PTO shaft and machine when engaging PTO. Keep others away.
8. Do not allow riders and do not stand or climb on machine when operating.
9. Keep hands, feet, hair and clothing away from moving parts.
10. Do not put hands or feet under machine while tractor engine is running.
11. Make sure nobody is near the machine when operating hydraulic equipment such as markers or folding wings.
12. Place all controls in neutral, stop tractor engine, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.
13. Keep all hydraulic lines, fittings and couplers tight and free of leaks before using.
14. Review safety instructions with all operators annually.



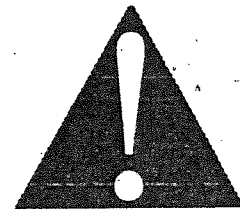
MAINTENANCE SAFETY



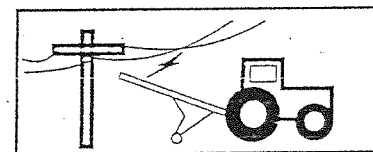
1. Follow all the preparation, operating, maintenance and safety information in the manual.
2. Support the machine with blocks or safety stands when working beneath it.
3. Follow good shop practices:
 - Keep service area clean and dry
 - Be sure electrical outlets and tools are properly grounded
 - Use adequate light for the job at hand.
4. Use only tools, jacks and hoists of sufficient capacity for the job.
5. Make sure all guards are in place and properly secured when maintenance work is completed.
6. Keep hands, feet hair and clothing away from moving or rotating parts.
7. Clear the area of bystanders, especially small children, when carrying out any maintenance and repairs or making any adjustments.



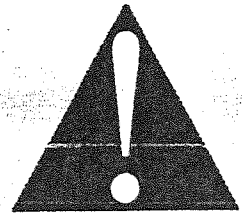
TRANSPORT SAFETY



1. Clean reflectors, SMV and lights before transporting.
2. Use hazard flashers on tractor when transporting.
3. Add extra lights and use pilot vehicle when transporting during times of limited visibility.
4. Keep away from overhead electrical lines.
Electrocution can occur without direct contact.
5. Be aware of the width and height of your machine.
Do not enter narrow or low areas without checking.
6. When transporting the machine on public roads, it is the responsibility of the operator to ensure prevailing Road Traffic Regulations are strictly adhered to.
7. Transport requires constant care to avoid accident, injury or death.



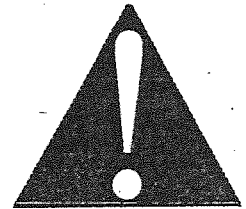
STORAGE SAFETY



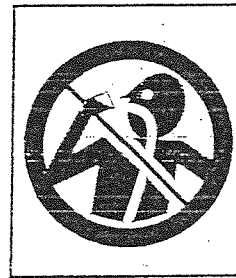
After the seasons use, the machine should be thoroughly inspected and prepared for storage. Repair or replace any worn or damaged components to prevent any unnecessary down time at the start of next season. To insure a long trouble free life, this procedure should be followed when preparing the unit for storage:

1. Clear the area of bystanders, especially small children.
2. Thoroughly wash the machine using a pressure washer to remove all dirt.
3. Touch up all paint nicks and scratches to prevent rusting.
4. Move to storage area.
5. Select an area that is dry, level and free of debris.
6. Unhook from tractor.
7. If the machine cannot be placed inside, remove the metering units and store inside, then cover machine with a waterproof tarpaulin and tie securely in place.
8. Store the machine in an area away from human activity.
9. Do not allow children to play on or around the stored machine.

TOXIC CHEMICAL SAFETY



1. When using toxic chemicals such as pesticide granules, herbicides or fertilisers, always follow the manufacturers instructions.
2. Wear rubber gloves and other protective gear as recommended by the manufacturer. Do not allow chemical or solution to touch skin. Some can be absorbed through the skin.
3. Do not breathe vapour. Stay away from chemical splash and vapour, and wear proper respirator when working with chemicals.
4. Do not ingest chemical. Chemicals can be toxic. If in eyes or mouth, read chemical manufacturers instructions and follow exactly.
5. In the event of an accident involving chemicals, seek medical attention immediately. A poison control number is normally inside the front cover of your telephone book.



FAN ASSEMBLIES

IMPORTANT WARNING

IMPELLER INSPECTION

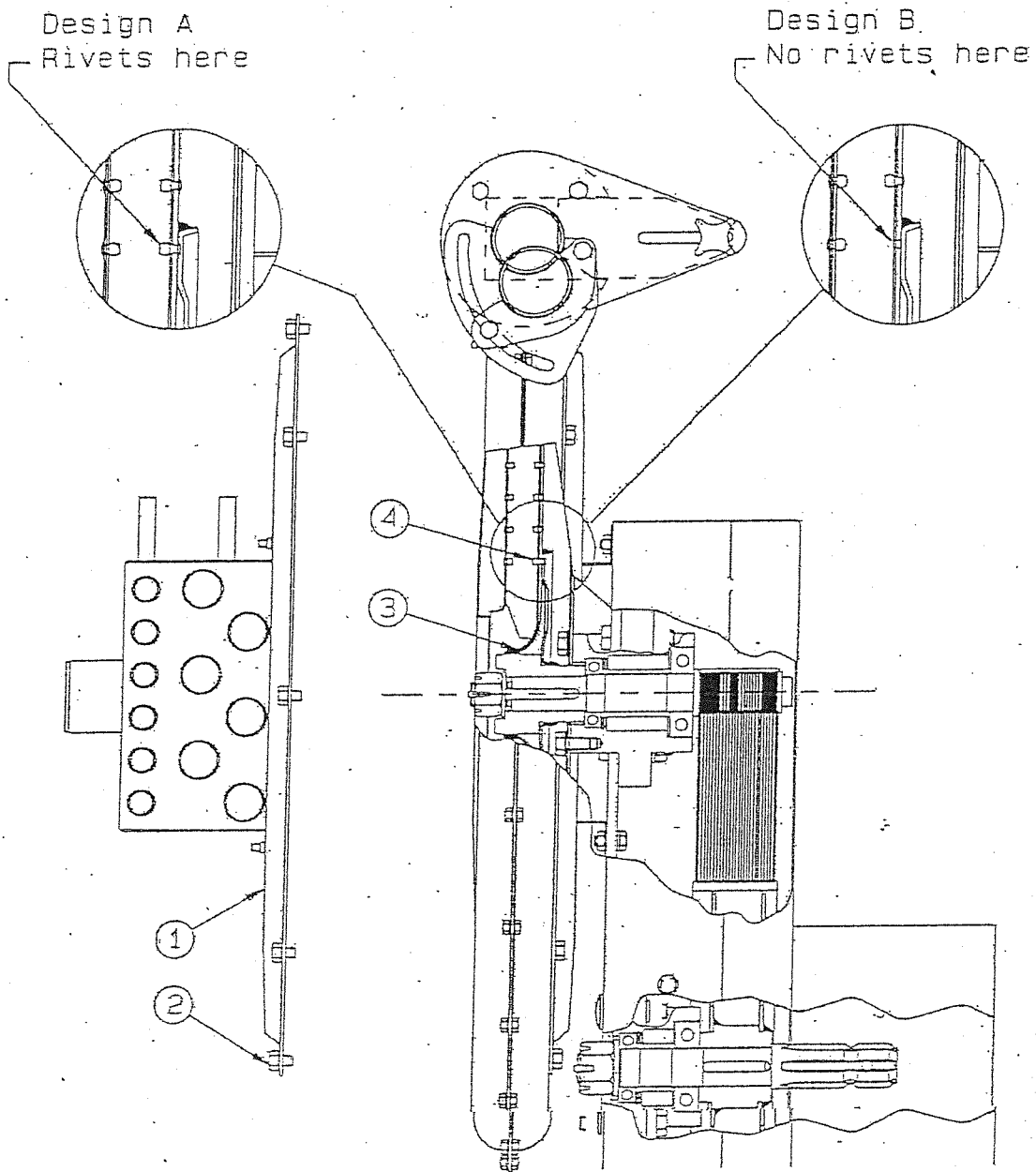
We have been issued with an advisory by the manufacturers of the fans. Please take the following request as a mandatory safety action.

1. All new fans should be inspected after one day's usage to check the integrity of the central impeller weld as indicated on the illustration opposite.
2. If there is any evidence of stress cracking or weld failure do not use the fan until a new impeller has been fitted.
3. Inspect the fan on an annual basis thereafter.

From the illustration opposite, you will see that there are two types of impeller, A and B. Please report any failures stating whether it is type A or B.

To Inspect Fan Impeller

1. Disconnect PTO drive line from tractor
2. Remove outer cover (1) by removing 8 screws (2)
3. Carefully clean the curved area marked (3) on the drawing round the entire circumference
4. Using a bright light, carefully inspect the clean area (3) for sign of stress or weld cracking
5. IF ANY CRACKING IS FOUND, STOP USING THE FAN UNTIL THE IMPELLER IS REPLACED
6. Please note whether Design A or B impeller is fitted, by reference to the line of rivets at (4)



SETTING UP FOR WORK

PRELIMINARY CHECKS

1. Number metering units

Mark identification number on both halves of each metering unit and on each singulator.

Note: singulators are factor calibrated to ensure all units perform similarly, they **MUST** remain fitted to the units as supplied.

2. Check row units

Raise machine off the ground, then check:

- a) **Wheels:** check all wheels rotate: check adjustment of scrapers and cleaners.
- b) **Pivots:** check nuts and bolts are tight: check chassis will pivot freely
- c) **Clod deflectors:** check that blade slides freely in track: then pin out of work.

3. Check PTO shaft

Start PTO raise machine fully. Adjust stop on tractor linkage control lever quadrant. If necessary, shorten PTO shaft to ensure end float at all times.

Fit the PTO drive shaft clutch end to fan unit, cutting to length as required. Try to obtain maximum sliding profile overlap, but without bottoming out, to avoid mechanical damage to the fan unit.

NOTES: SEE SHAFT MANUFACTURERS SERVICE INSTRUCTIONS

- a) In its working position, the drive shaft must not be extended by more than half the sliding profile overlap available when fully compressed.
- b) Shorten inner and outer guard tubes equally.
- c) Shorten sliding profiles by same length as guard tubes.
- d) Remove all sharp edges and burrs.
- e) GREASE SLIDING PROFILES.
- f) GUARD CHAINS MUST BE PROPERLY FITTED.
- g) Do not suspend drive shaft from the chain.

DO NOT RELY ON TRACTOR HYDRAULICS.

DO NOT WORK UNDER UN-PROPPED MACHINE

4. Check hoses

Check all hoses are **CORRECTLY** and **SECURELY** fitted:

Raise and lower machine: check hoses are not too tight, and do not contact shafts, sprockets or chains.

Note: unused hose stubs on the fan **MUST** be plugged.

5. Check hydraulics

Check operation of hydraulic markers or other hydraulic equipment.

6. Check drives

Check drive shaft locking collars are fitted securely.

7. Check tyre pressures

Chain Land Drive Wheels: 600-16 3.3 bar (48 psi)

Transport Wheels: 4.0 bar (59 psi)

STAR SEED DISCS CHECKING, FITTING AND CARE

CHECKING SEED DISCS BEFORE USE

1. Discs should not be completely flat but should look slightly curved or warped. Completely flat discs should be discarded
2. Run a finger round the edge of discs (Fig.1), which should be completely smooth. Roughness indicates "under etching". Discs with seed holes or 0.8mm diameter and above should, if under etched, have the edge smoothed off with a fine abrasive stone. Those with holes smaller than 0.8mm should be discarded.
3. Inspect discs for dents or creases. Damaged discs will not work and should be discarded.
4. Hold discs up to the light and check for blocked holes.

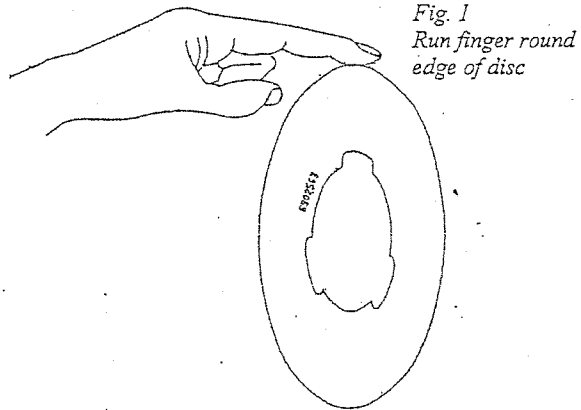


Fig. 1
Run finger round
edge of disc

FITTING SEED DISCS

1. Seed discs must always be fitted concave towards the unit air gallery block even if they appear to function either way round. (Fig.2). If in doubt the discs can be checked by laying them on a flat surface and pressing them firmly down. (Fig.3). The outside edge of the disc should contact the flat surface all the way round indicating the way the disc should be fitted into the unit. If it does not turn the disc over and try again.

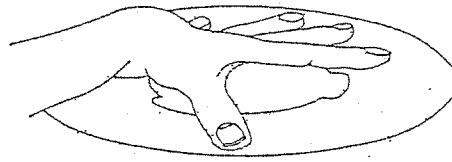


Fig. 2
Concave towards unit

Fig. 3
Disc should contact flat surface all
round outside edge when pressed
firmly in centre as shown.

2. Having established which way round the discs should be fitted, mark the outside face of the disc with a felt tip pen to avoid future incorrect fitting as seed discs should never be turned over.
3. Mark the seed discs so they remain with their respective units, and always fit them with the etched part number opposite the "red" dowel on the unit turntable. (Fit.1).

CARE OF SEED DISCS

1. Remember that seed discs are fragile and no attempt should be made to remove a disc from a unit while vacuum is still applied.
2. Discs are not manufactured from stainless material and if not stored in the blue plastic bags supplied, or if left unused in a damp environment, corrosion may occur. Slight surface corrosion is not detrimental to the performance of the disc and no attempt should be made to clean off corrosion as this may damage the disc and render it unusable.
3. Under no circumstances should oil or other corrosion inhibitors be applied to the surface of seed discs, as residue will impair performance particularly with small seeds.

PREPARATION FOR WORK IN THE YARD

1. Check coulters

Check required coulters are fitted correctly. For detailed instructions, see Page 11 (COULTER FITTING INSTRUCTIONS)

2. Check row widths

Lower machine to ground, draw forward and check row widths at coulter tips

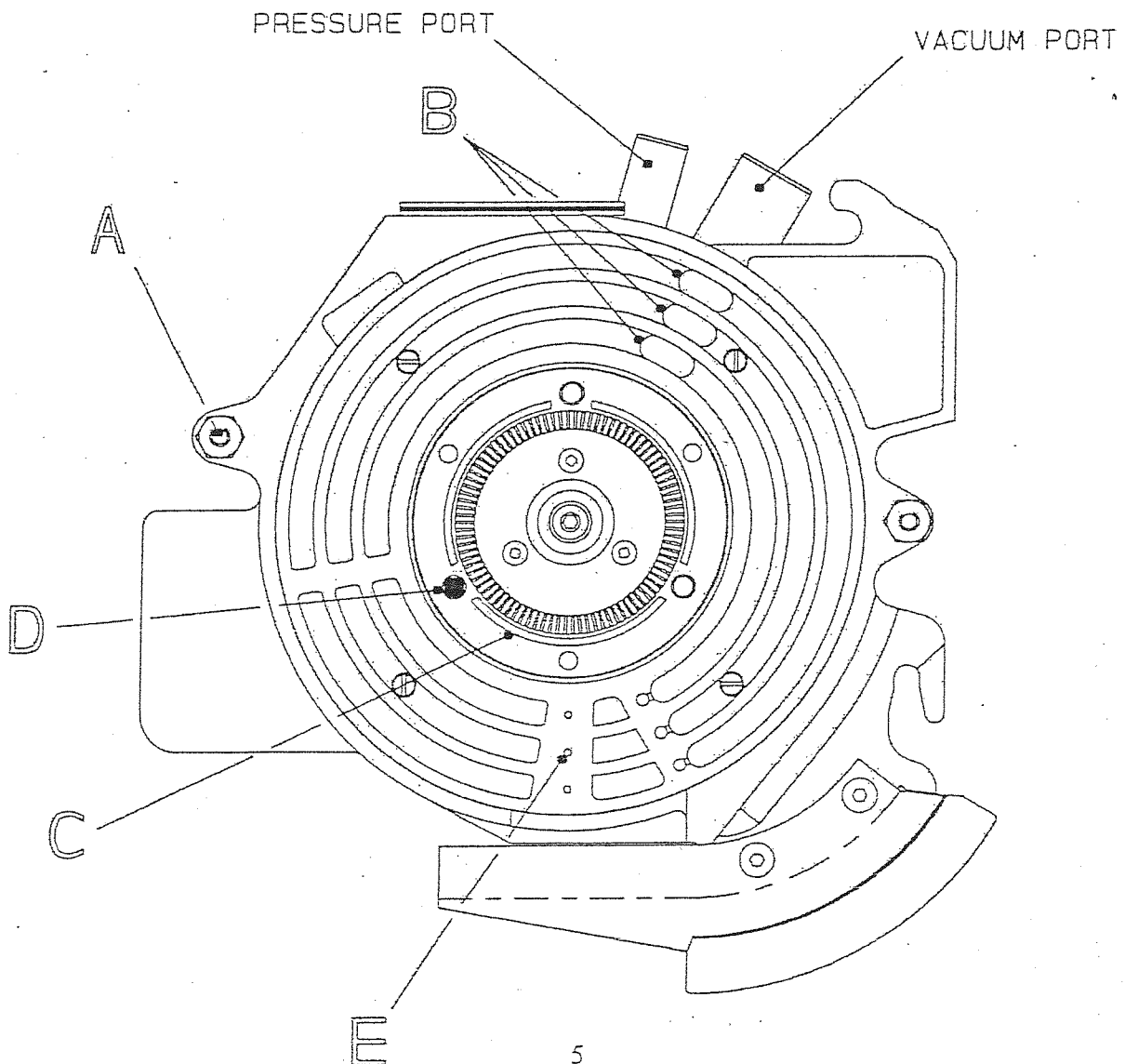
3. Clean metering units

Empty seed from hopper, using removable drain plug, or vacuum seed emptying device.

Remove hopper side of metering units and ensure the unit is absolutely clean. Use soft brush to clean vacuum galleries B; dry cloth to clean face of gallery block; air line to blow dust and seed dressing from inaccessible galleries. Note: remove pressure hose from metering unit to allow dust to escape, and direct air line behind turntable C and through hole cleaning jets E.)

IMPORTANT: METERING UNITS SHOULD BE CLEANED AT LEAST TWICE A DAY AND AFTER WORK:

(Note: avoid using dirty or heavily dressed seed, as the unit will not function correctly with such seed: if its use is unavoidable, the unit must be cleaned frequently.)



4. Set drilling depth

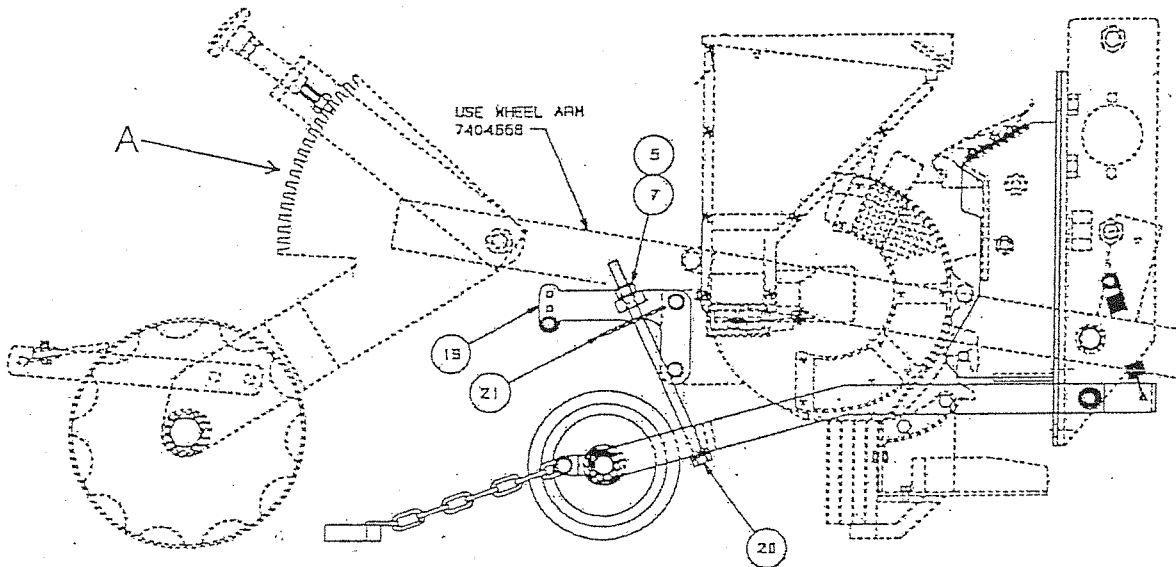
a) Coulter depth

Set rear wheel depth adjustment quadrant (A) to give a sowing depth slightly shallower than the required normal drilling depth (Note: field adjustment of sowing depth is most easily achieved by progressively adjusting coulters downwards until the desired sowing depth is achieved).

b) Seed press wheel depth (if fitted)

Setting of press wheel depth is achieved by adjusting item 7 M10 nyloc nut, set to same depth as coulters, or as required. (Note: use of seed press wheels is not recommended in damp soils: if in doubt, remove from machine)

EMPTY SEED FROM HOPPERS BEFORE TRANSPORTING MACHINE TO FIELD.



UNIT SETTING AND CALIBRATION

1. Raise machine on tractor three-point linkage until main drive wheels are clear of ground.
2. Refer to seed setting guide and seed spacing charts, to determine seed discs and gear setting required.
3. Set landwheel drive gearbox in required gear, rotate landwheel and check drive chain is tight and in line.
4. Remove hopper halves of units, retained by two conical nuts, making sure they are marked in such a way they will be paired with the same metering units when replaced. Normally with row number.
5. Refer to seed setting guide and check the units are set up to handle the seed to be metered.
6. Select, check and fit seed discs See separate instruction
7. Start tractor, engage PTO and open throttle until the vacuum gauge reads 30mb. See separate instruction
8. Rotate the drive landwheel(s) and check that the seed discs are being sucked firmly to the plastic air gallery blocks. The discs will vibrate if air is leaking, and this will be clearly audible. If discs are leaking air, pull off the vacuum hose, turn the offending disc(s) over, replace hose, and check again.

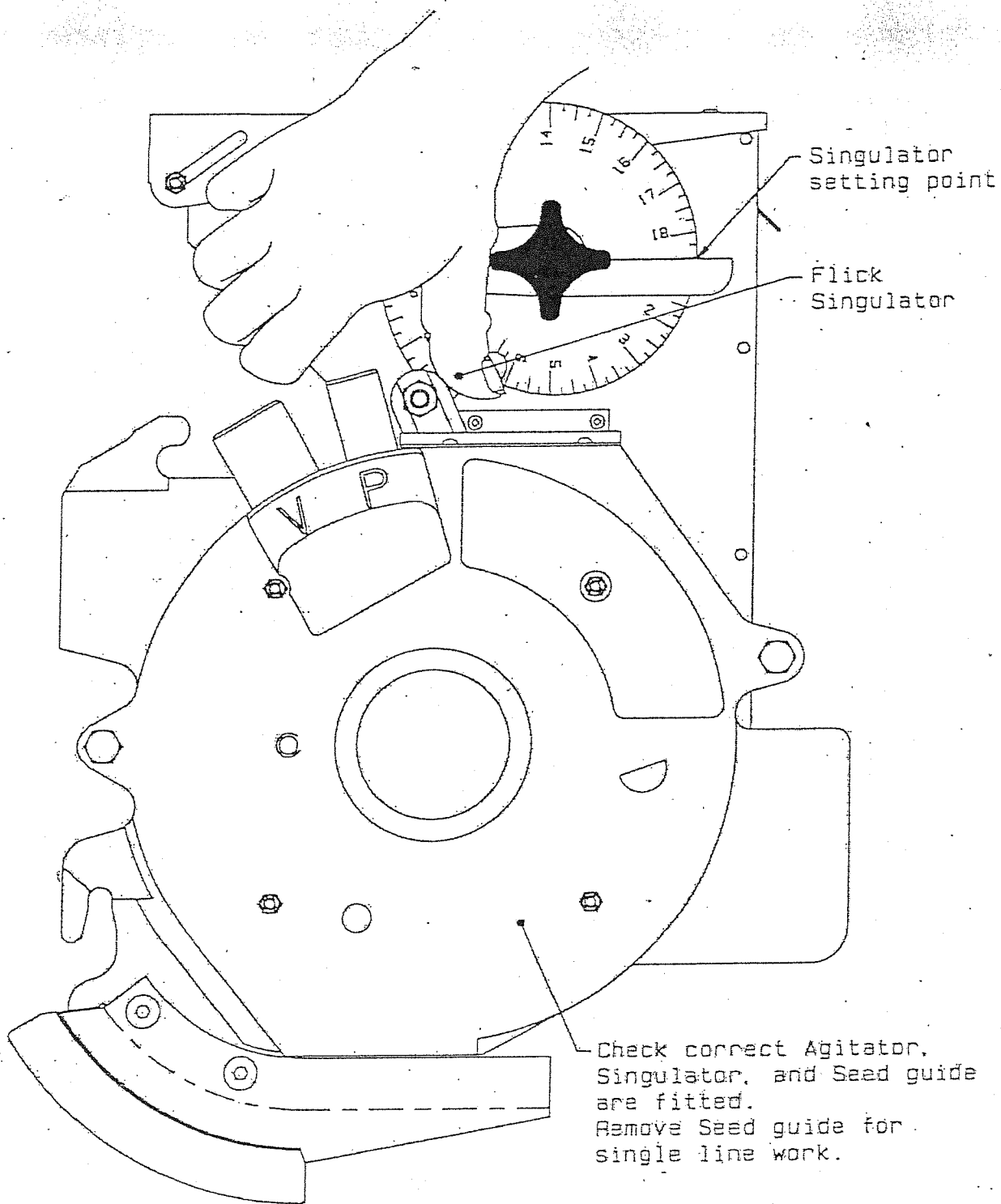
NOTE: A seed disc that does not appear to work should be tried on a unit that IS working, to establish that the problem is with the seed disc, and not the offending unit. Do not be tempted to increase vacuum to get a disc to seal, as field problems will inevitably result. Mark seed discs so they remain with their respective units.

9. Refit unit hopper halves to their respective units, and tighten the conical nuts with the tool supplied.
10. Flick singulator arms away from setting cams a few times, to ensure singulators are seated squarely and firmly against face of seed discs
11. Choose a convenient unit to calibrate, where the seed disc is easily visible. Set the singulator on no 16, check the seed emptying plug is fitted, and pour seed into the hopper

NOTE: With some seeds the odd miss is unavoidable as resist the temptation to increase vacuum unnecessarily.

NOTE VACUUM LEVEL

12. Set air pressure to 20% of vacuum or 10mb, whichever higher.
13. While rotating landwheel adjust singulator downwards until NO seeds are present on the seed disc, and then, very gradually readjust to a higher setting until single seeds appear.
14. Adjust all singulators to the same setting, pour seed into hoppers, and turn handwheel. If vacuum level rises, readjust using tractor throttle. **NOTE ENGINE R.P.M.** required for work. Check all units are performing satisfactorily, adjusting if necessary.



UNIT SETTING AND CALIBRATION

FIELD OPERATION

1. Tractor linkage control and coulters

- a) ALWAYS lower and raise machine on the move to prevent coulters blockage.
- b) ALWAYS raise machine and check coulters for blockage if you have stopped for any reason whilst drilling
- c) ALWAYS move tractor linkage control lever to "fully down" position when going into work to ensure adequate land wheel drive
- d) ALWAYS raise machine fully when turning at headlands

2. Tractor forward speed

- a) ALWAYS operate at the recommended forward speed (slower speeds are OK, but higher speeds will give misses on the seed disc)

3. Hoppers and transport

- a) ALWAYS fill hoppers with seed to the same level, and check periodically that seed levels go down evenly
- b) ALWAYS keep hopper lids firmly closed except when filling
- c) ALWAYS empty hoppers of seed before transporting machine or driving long distances; for short distances, keep PTO engaged to ensure discs remain seated against vacuum galleries.

4. Gauges and seed discs

- a) REGULARLY check vacuum and pressure reading during work; immediately investigate cause of any unexpected change of readings, or of any unusual noise from the fan. A loud whistling noise from the metering unit indicates complete loss of vacuum. Note: the tractor engine can be allowed to idle when the tractor is turning or is stationary at headlands; only during work must the vacuum and pressure be maintained)
- b) REGULARLY check unit performance. To check seed disc pick up, raise machine on the move at normal drilling speed, maintain vacuum, stop and inspect seed discs. (Note: misses usually indicate blocked holes in disc, or unit requires cleaning.)
- c) ALWAYS wipe seed off the disc in the area of the singulator before replacing hopper side of metering unit, to avoid trapping seed between the singulator and the disc.
- d) ALWAYS clean units at least twice a day and after work do not leave seed, seed dressing or dust in the unit overnight; if the machine is to be out of use for more than ONE DAY, the seed discs should be removed and stored in a dry place.

NOTES: CORRECT OPERATION IS THE RESPONSIBILITY OF THE OPERATOR WHO SHOULD CHECK PERIODICALLY THAT THE DESIRED SEEDING RATE, PLANTING DEPTH AND MACHINE PERFORMANCES ARE BEING ACHIEVED.

STAR COULTER DRILLING RECOMMENDATIONS

Part No	Description	Recommended for
8002617	Single Line Cast	General Purpose
8002550	Single Line Ceramic	Sticky and/or abrasive
8003407	Single Line Tek Tip	Sticky and/or very abrasive
7703307	Single Line Non-stick UHMW	Sticky/trashy. Drilling depth critical. Non-abrasive soil types
7703271	65mm Hyline Shallow Fin 2 Line	Stoney/cloddy or top lifting carrots
7703272	65mm Hyline Shallow Fin 3 Line	Stoney/cloddy or top lifting carrots
7703263	75mm Hyline Deep Fin 2 Line	Fine clean seed beds. Minimum soil disturbance
7703264	75mm Hyline Deep Fin 3 Line	Fine clean seed beds. Minimum soil disturbance
7703308	65mm Hyline Non-stick UHMW 2 Line	Sticky/trashy. Drilling depth critical. Non-abrasive soil types
7703309	65mm Hyline Non-stick UHMW 3 Line	Sticky/trashy. Drilling depth critical. Non-abrasive soil types
7703310	75mm Hyline Non-stick UHMW 2 Line	Sticky/trashy. Drilling depth critical. Non-abrasive soil types
7703311	75mm Hyline UHMW 3 Line	Sticky/trashy. Drilling depth critical. Non-abrasive soil types
7703214	100mm Hyline Shallow Fin 3 Line	Stoney/cloddy
7703267	100mm Hyline Deep Fin 2 Line	Fine clean seed beds. Minimum soil disturbance
7703213	100mm Hyline Deep Fin 3 Line	Fine clean seed beds. Minimum soil disturbance
7703312	100mm Hyline Non-stick UHMW 2 Line	Sticky/trashy. Drilling depth critical Non-abrasive soil types
7703313	100mm Hyline Non-stick UHMW 3 Line	Sticky/trashy. Drilling depth critical Non-abrasive soil types
7703216	150mm Hyline Deep Fin 3 Line	Fine clean seed beds. Minimum soil disturbance
7703314	150mm Hyline Non-stick UHMW 2 Line	Sticky/trashy. Drilling depth critical Non-abrasive soil types
7703315	150mm Hyline Non-stick UHMW 3 Line	Sticky/trashy. Drilling depth critical Non-abrasive soil types

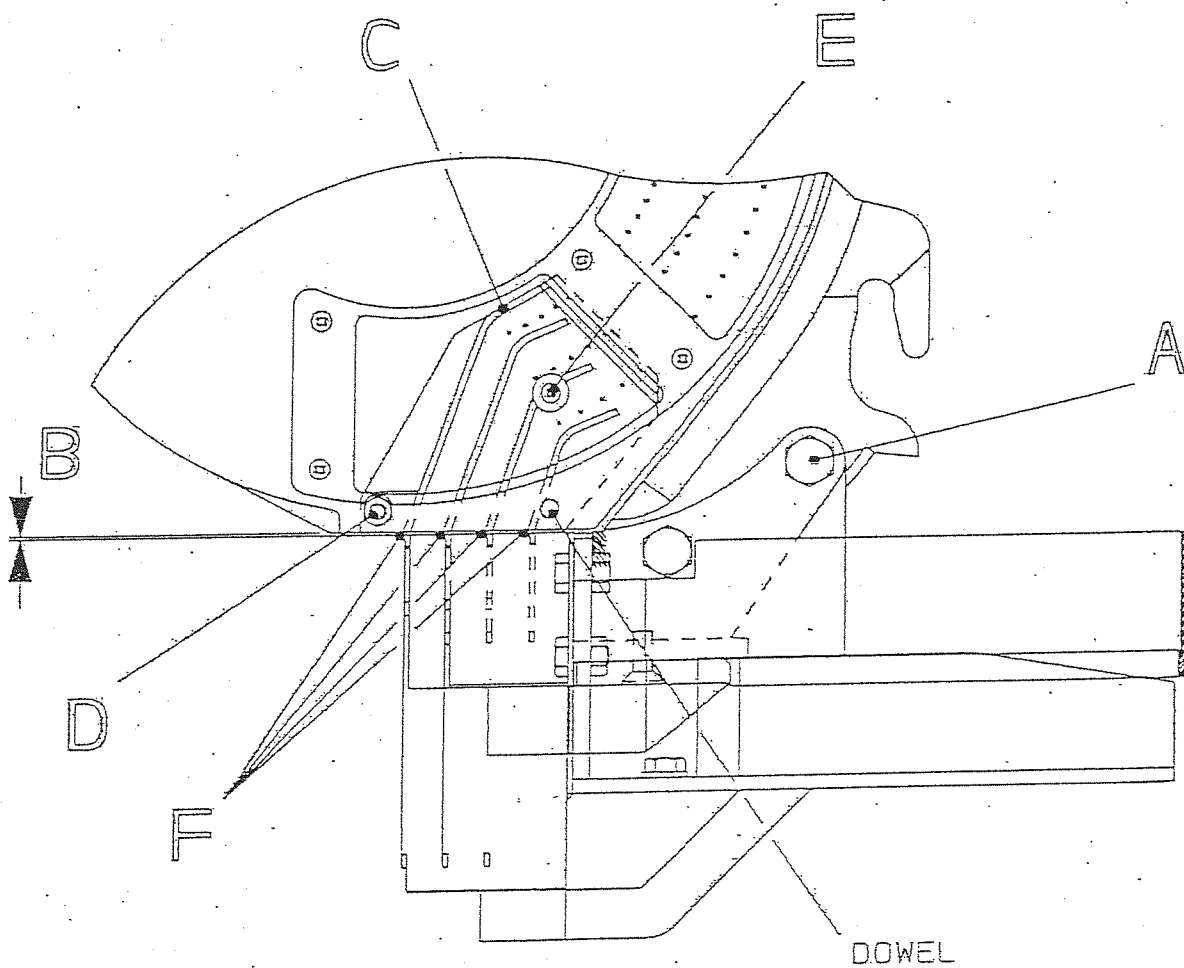
COULTER FITTING INSTRUCTIONS

1. Fitting 2 or 3 Line Coulter and Seed Guide

- a) Fit coulter over the bottom of the unit body casting, align the holes A and retain with the fasteners supplied.
- b) Pivot the rear of the coulter upwards to achieve the minimum gap B between the underside of the body casting and the top of the seed chutes at the rear of the coulter, 1mm maximum.
- c) Holding the coulter in position, tighten the fasteners until the coulter is firmly clamped in place
- d) Fit seed guide C to the hopper side of the metering unit locating the dowel on the guide through the holes in the casting. Attach using the screw and self-locking nut D with the nut on the outside, as shown.

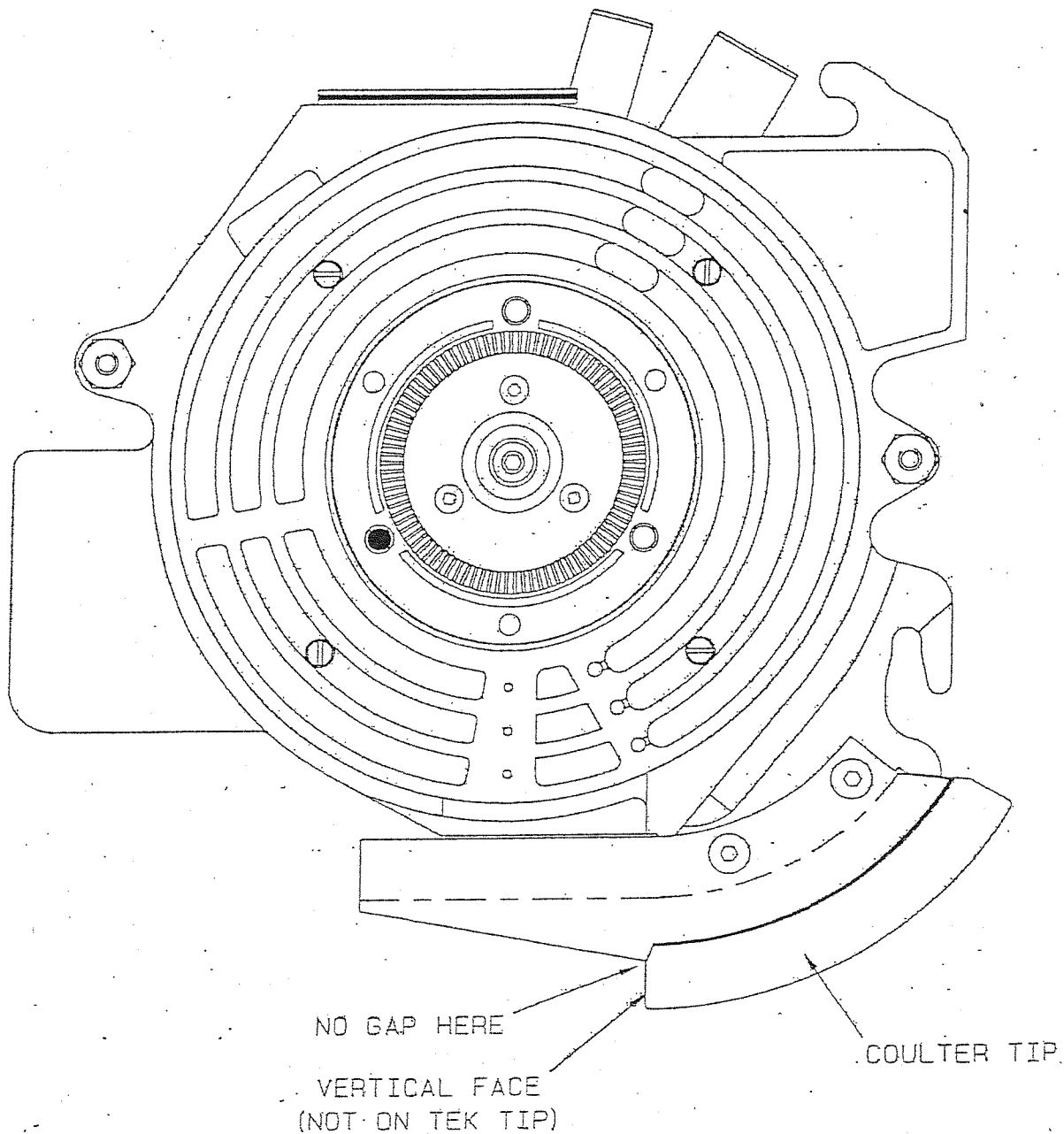
Finally, fit the self-tapping screw E through the hole in the Perspex window into the boss moulded onto the guide. The seed guide is fragile and will be damaged if the fasteners are over-tightened.







(Note: when the hopper side is fitted to the body, check that the bottom of the seed guides F line up with their respective coulters seed chutes.)



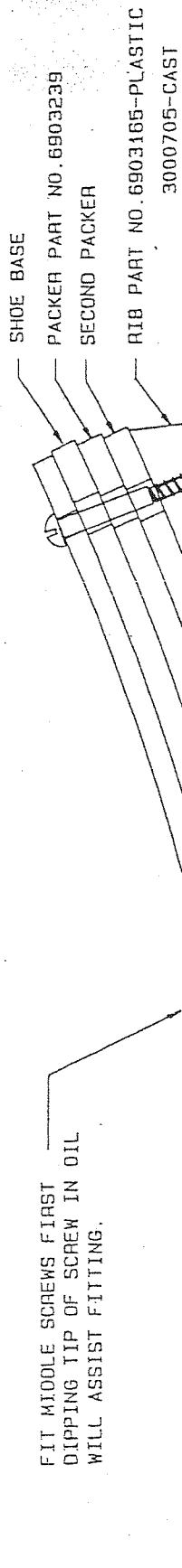
2. Fitting Single Line Coulter

- a) The coulter tip is clamped to the bottom of the unit body casting between stainless steel clamping plates, by two pairs of socket head screws. When fitting, ensure that the vertical rear face of the coulter tip locates firmly against the cut-outs in the clamping plates as shown, to prevent soil entering the seed outlet area.
- b) When changing from 2 or 3 line coulters to single line, remove the seed guide from the hopper side of the metering unit to allow seed to fall centrally to the furrow bottom.



- PLASTIC  2286008 1 INCH X NO.8 ROUND HEAD SCREW -USE WITH NO PACKERS
- CAST  2309015 M4 X 16 SET SCREW
- PLASTIC  2286009 1.1/4 INCH X NO.8 ROUND HEAD SCREW -USE WITH ONE PACKER
- CAST  2309017 M4 X 25 SET SCREW
- PLASTIC  2286010 1.1/2 INCH X NO.8 ROUND HEAD SCREW -USE WITH TWO PACKERS
- CAST  2309018 M4 X 30 SET SCREW

FIT MIDDLE SCREWS FIRST
DIPPING TIP OF SCREW IN OIL
WILL ASSIST FITTING.



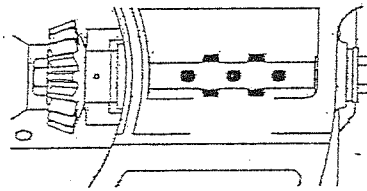
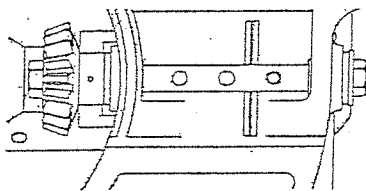
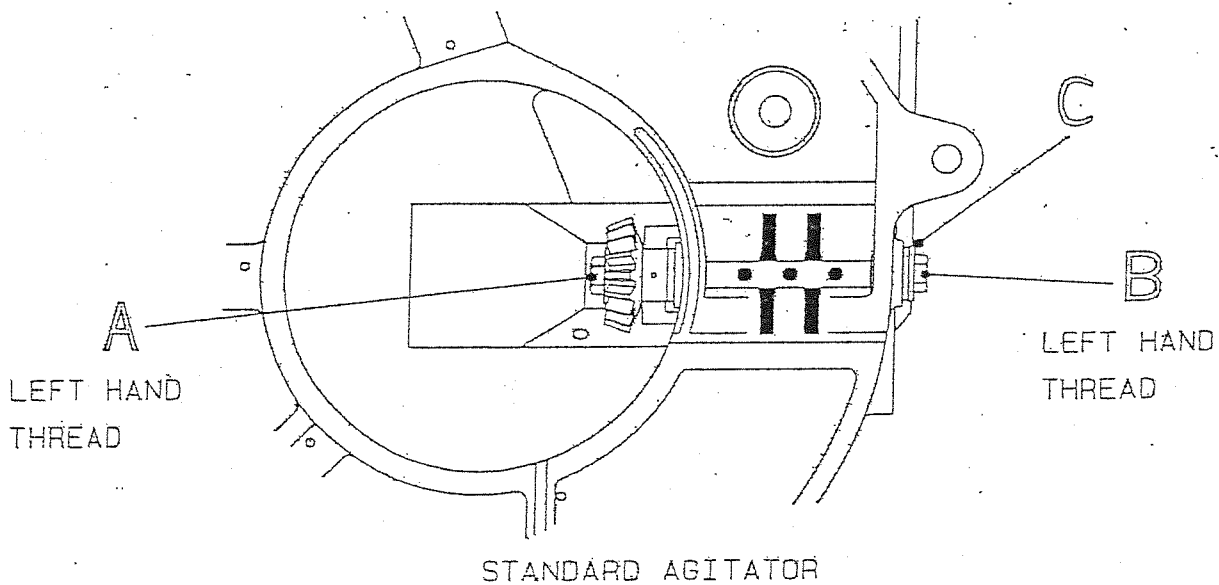
FITTING RIB PACKERS TO
NON-STICK SKI SHOES

PREPARING METERING UNITS

1. Fitting replacement Agitator

Most seed types require the STANDARD AGITATOR with various numbers of rubber fingers, except for some pelleted (full coated) seed, and raw parsnip. See Seed Setting Guides. To prepare a PELLETED AGITATOR, snip off the fingers of a standard agitator to 3mm length. The PARSNIP AGITATOR has two roll pins in place of the rubber fingers. To fit, follow this procedure:

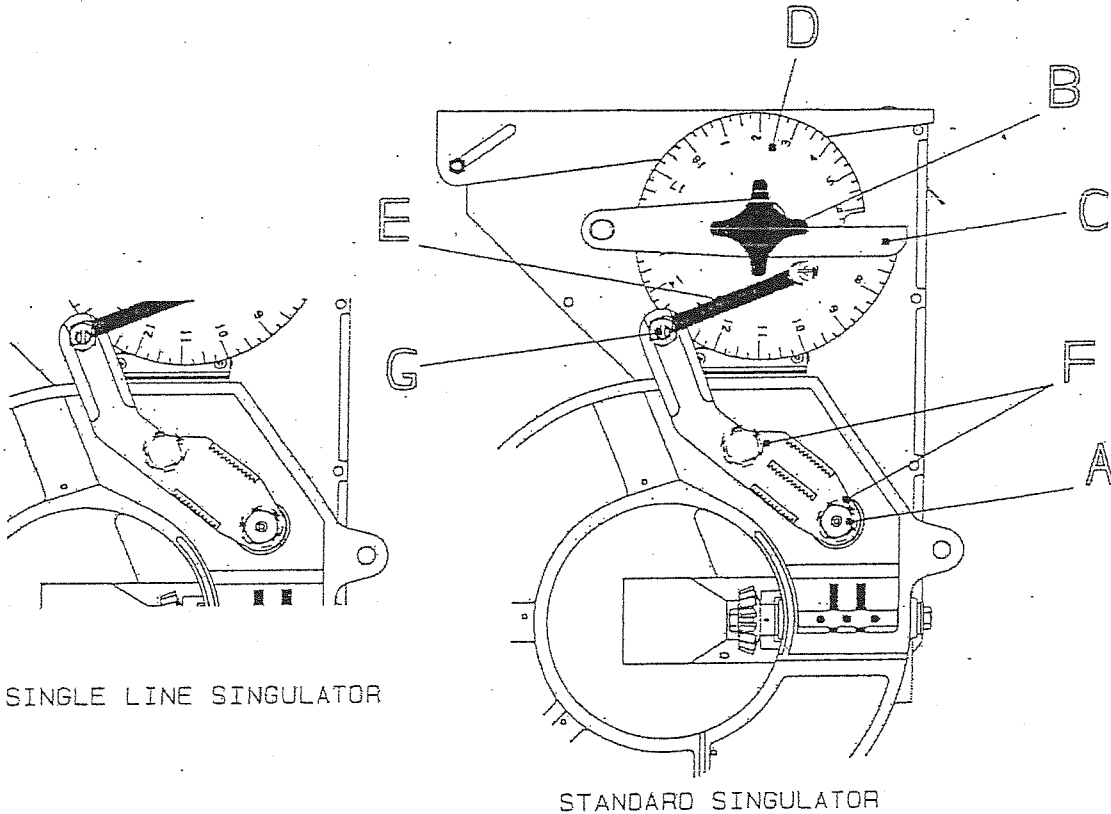
- a) Holding the agitator spindle with a pair of grips, unscrew gear assembly A (left hand thread) and bolt B (left hand thread). The complete agitator may then be removed.
- b) When re-assembled the agitator should turn freely. If more end float is required, washer C may be removed.



2. Fitting replacement Singulator Arm The STANDARD SINGULATOR is suitable for most one, two and three line drilling. To handle some larger seeds, the alternative SINGLE LINE SINGULATOR may be required. Refer to SEED SETTING GUIDE. To change Singulators, follow this procedure:

- a) Remove handwheel B and lift off setting arm C and setting cam D. Remove retaining cap A, if fitted.
- b) Lift off Singulator, and unhook spring E
- c) When re-assembling, ensure that springs F are located over the bosses on the underside of the Singulator.

(Note: Singulators are factory calibrated to ensure all units perform similarly: they must remain fitted to the units as supplied. When fitting new Singulators, the units must be re-calibrated - see instructions



3. Calibrating singulator assemblies It is the responsibility of the operator to ensure that all units are calibrated similarly. Machine calibration must be checked and adjusted when the machine is new, periodically thereafter, and when fitting new or alternative singulators. Follow this procedure:

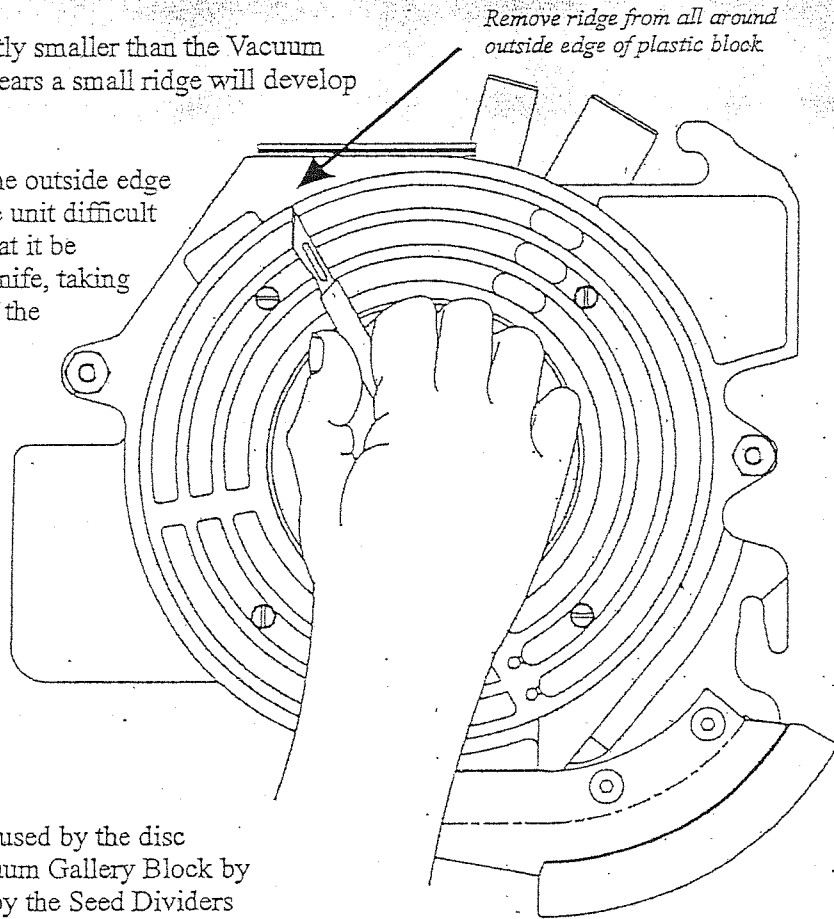
- a) Select your most difficult seed (for example raw carrot, raw chicory, raw lettuce)
- b) Clamp the singulator cam on all units to setting 6 and leave them at this setting throughout the calibration procedure. Then calibrate each unit individually by turning the "eccentric boss" G until all units deliver the same. (To adjust the "eccentric boss", loosed the lock nut until the boss can just be turned by a large screwdriver, then adjust by turning anti-clockwise. When satisfied, hold the boss in position using the screw-drive, and re-tighten the lock nut.
- c) Check in work that the seed usage from all units is similar. If seed usage from any unit is slightly different from the remainder, adjust the singulator until all units perform similarly.

UNIT MAINTENANCE

Because the seed disc is slightly smaller than the Vacuum Gallery Block, as the block wears a small ridge will develop around the outside.

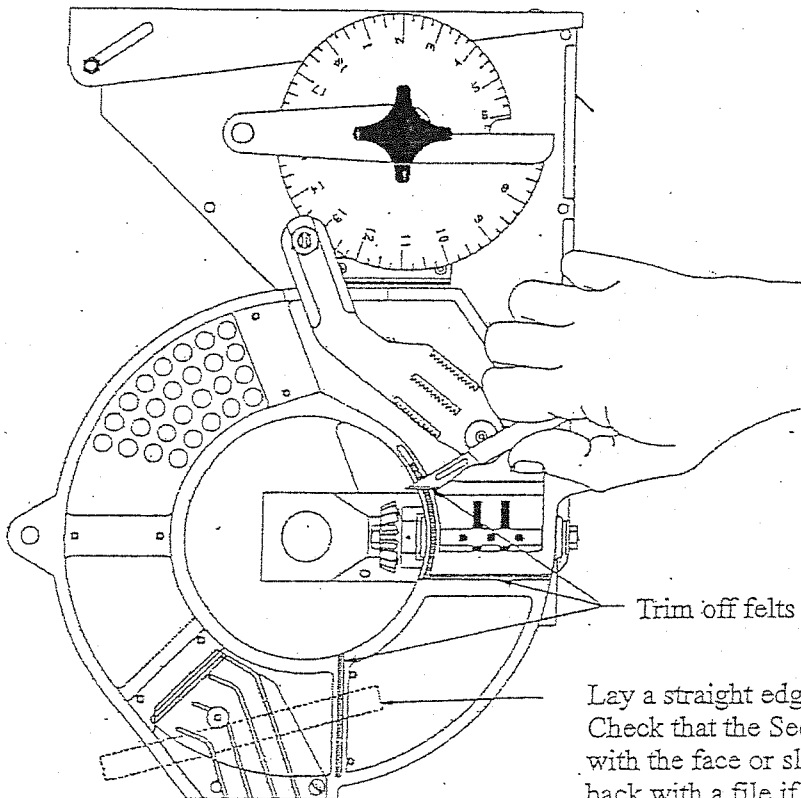
Because this ridge may grip the outside edge of the Seed Disc and make the unit difficult to drive, it is recommended that it be removed with a sharp utility knife, taking care not to damage the face of the Gallery Block.

The block may be removed if desired and, if replaced in the same unit, re-sealing is unnecessary.



Most premature disc wear is caused by the disc being clamped against the Vacuum Gallery Block by the felt seals in the unit lid, or by the Seed Dividers

Before fitting a Seed Disc, always check that the felt seals are flush with the face of the unit lid casting. If not, trim flush, using a scalpel or sharp utility knife as shown below.



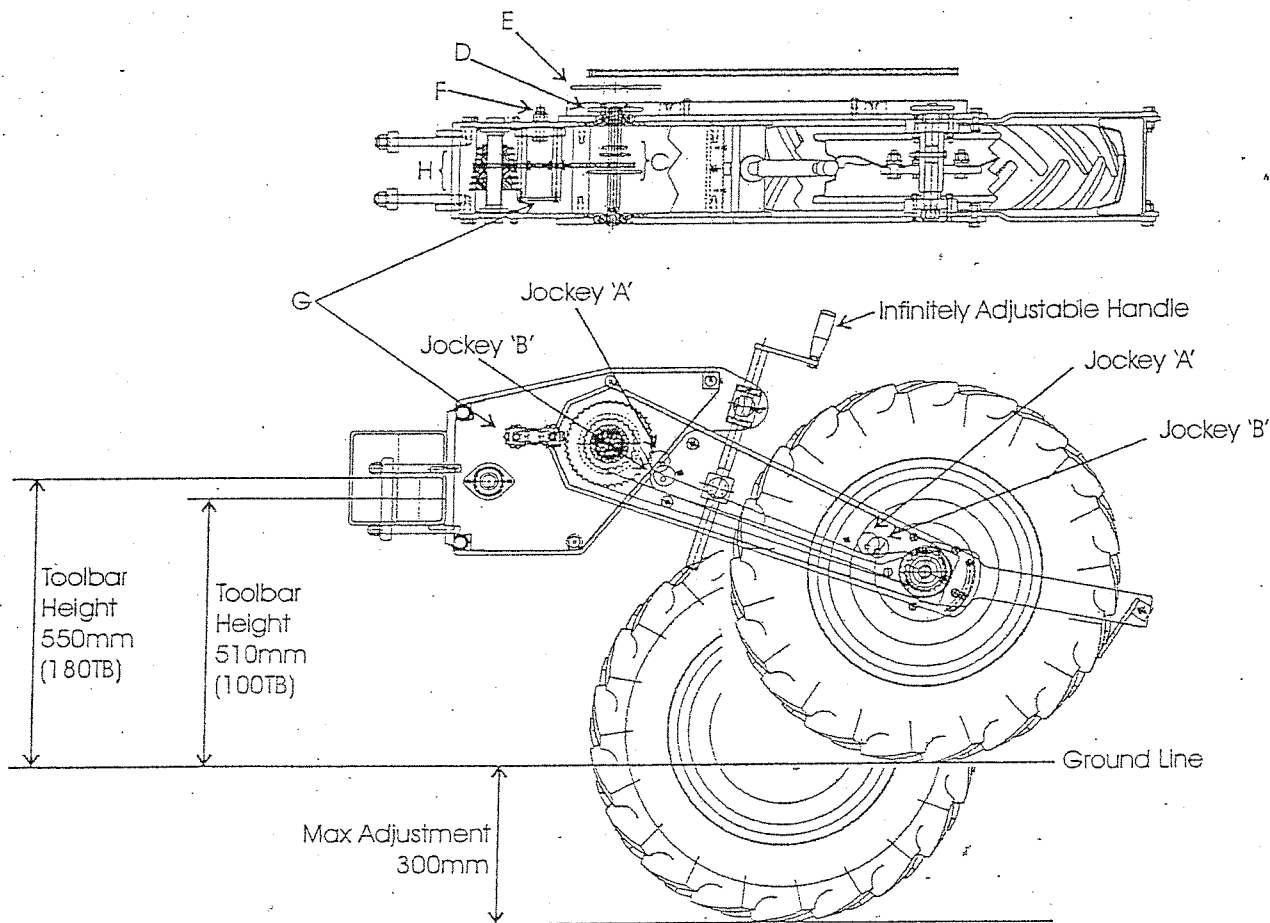
SEED DISCS

1. Choosing the correct Seed Disc Choosing the correct disc is vital to achieve the desired performance. Follow these guidelines.
 - a) Find the seed you wish to plant in the SEED SETTING GUIDE. Select the number of lines you will be planting (1,2 or 3) and note the recommended seed disc. (Note: the first digit – for example 0.6 – is the diameter of each hole in mm: the second digit – for example 96 – is the number of holes in each line: a single line disc of this specification is designated 0.6 x 96 x 1 line, a two line disc 0.6 x 96 x 2 line, and a three line disc 0.6 x 96 x 3 line)
 - b) You may be given a choice of seed discs (for example, 96 or 48 holes). If so, for faster forward speeds, choose the greater number of holes, but for best accuracy of seed spacing when multi-line drilling, choose the lesser number of holes.
 - c) Two disc speeds are shown: slow (12 rpm), and fast (25 rpm). As a general rule, the slower the disc speed the better the seed spacing, particularly with multi-line drilling. The special instructions section on the SEED SETTING GUIDE indicated where alternative instructions apply.
 - d) Having selected a seed disc, refer to the SEED SPACING CHART for the appropriate number of holes and the Gearbox (24 tooth or 40 tooth sprocket you will be using. Then check that the disc speed you have chosen (rpm seed disc) gives an acceptable forward speed at the seed spacing you require.
 - e) Standard seed discs are shown in the SEED SETTING GUIDE. Other discs are available to special order. These include 3-line discs for carrot and onion giving 75% seeding rate in the central line (for example 0.6 x 144/144/108; 0.8 x 96/96/72; etc).

SETTING SEED SPACING

1. Choose Settings Select the required gear setting from the appropriate SEED SPACING CHART. The setting indicates the sliding sprocket (C) and the final drive sprocket (H) that are required. It also indicates the primary drive sprocket required, 24T (D) (as fitted) and 40T (E).

2. Setting Seed Spacing
 - a) Check required primary drive sprocket is fitted D or E. Tension chain by fitting 2 off jockeys in correct position. 24T (D) jockey position (A) 40T (E) jockey position (B). DO NOT OVER TENSION CHAIN.
 - b) Loosen nut (F) and turn tensioner frame (G) to release secondary drive chain.
 - c) Fit drive chain over appropriate "driven sprocket" and "sliding sprocket". Check that the chain is in line and re-tension, re-tighten nut (F).
 - d) Turn the landwheel by hand and check chain tension and drive.



SETTING AIR SUPPLY

1. Choose settings Identify the required vacuum and pressure settings, and the recommended forward speed. Check recommended seed discs are fitted in all units.
2. Check for leaks Check all hoses are securely connected. Check unused vacuum and pressure ports on fan are securely plugged.
3. Set valves Follow this procedure:
 - a) Open fully valves 4 and 5 on fan, start tractor, engage PTO on minimum engine speed
 - b) Increase tractor engine speed until required vacuum reading shows on vacuum gauge.

SAFETY INSTRUCTION. NEVER EXCEED 540 RPM PTO SPEED

(Note: If the gauge does not respond immediately to the increase in engine speed, or the belt screams, the fan drive belts is probably slack.

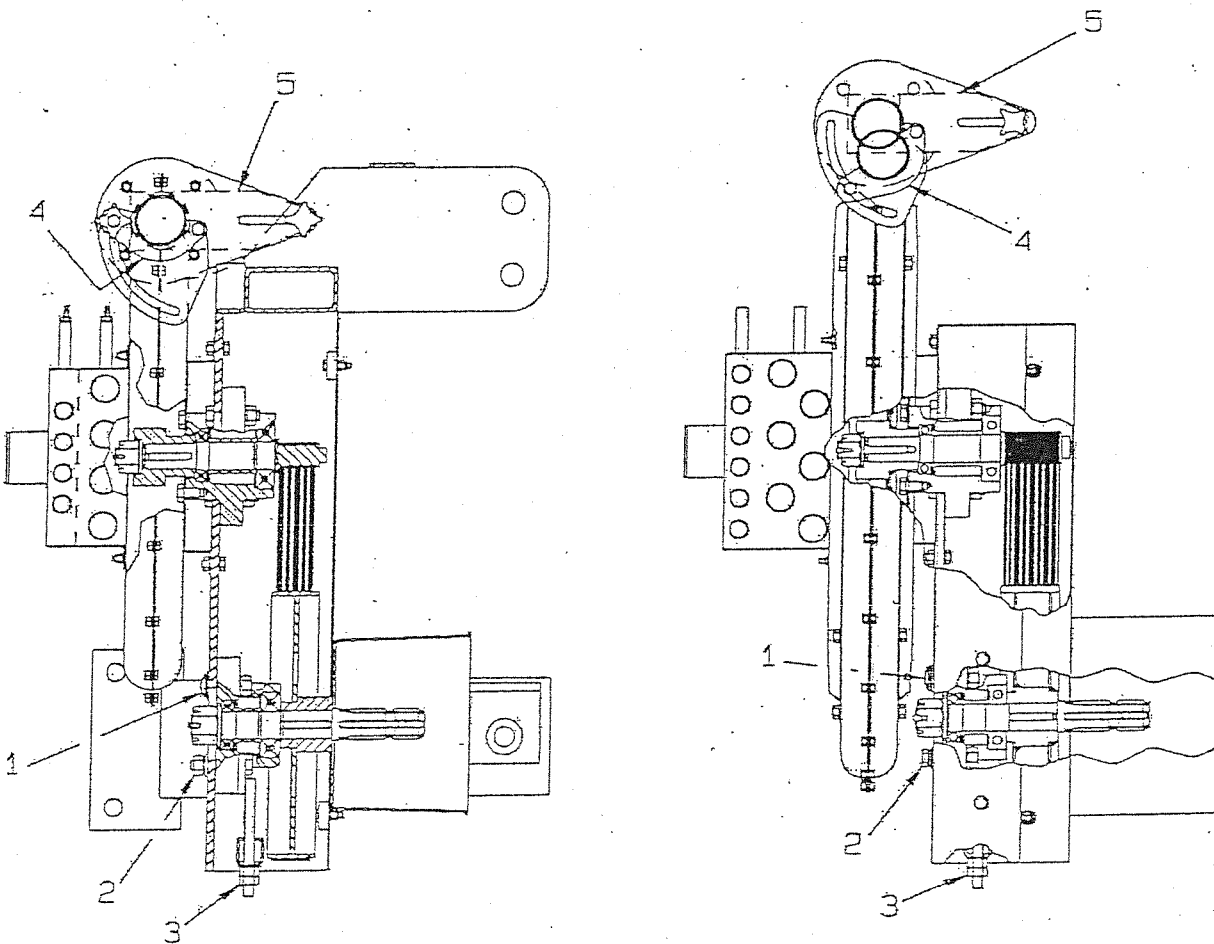
- c) Progressively close valve 4 until the required pressure reading shows on pressure gauge. Increase engine speed if necessary to maintain vacuum level. If pressure reading is too high even with valve 4 fully open, remove plugs from unused pressure ports.
- d) Pour seed into hoppers, turn land drive wheel(s) in forward direction to prime the discs with seed, and readjust vacuum and pressure if necessary (see notes below)

Notes on Setting Valves

- a) Increasing tractor engine speed increases both vacuum and pressure
- b) Closing valve 4 increases pressure and reduces vacuum
- c) Valve 5 is normally left fully open: closing it reduces both vacuum and pressure

BELT TENSION

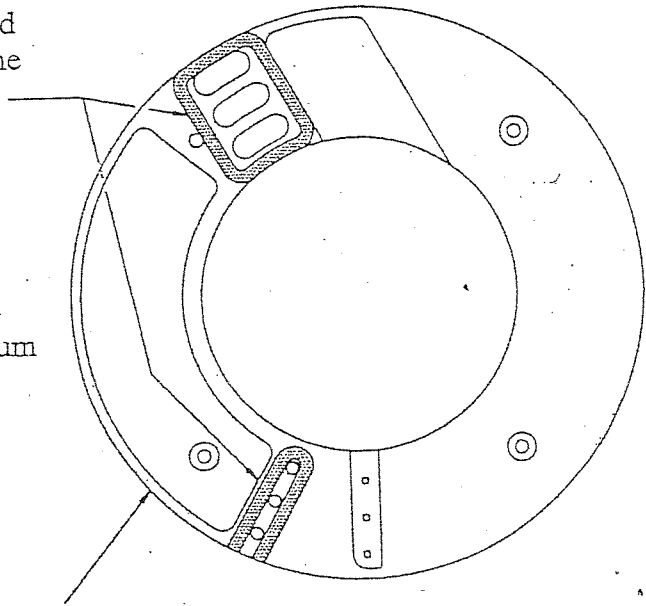
1. Slacken off the bottom bearing housing nuts and bolts (1 & 2) until the PTO pulley moves under its own weight.
2. Tighten the adjusting screw nut (3) whilst rotating the PTO pulley by hand until the slack is taken out of the belt.
3. For the 17 rib fan, tighten the adjuster screw nut a further 0.83 turns (5 flats on the nut) whilst turning the PTO pulley. For the 26 rib fan, tighten the adjuster screw nut a further 1.5 turns (9 flats on the nut) whilst turning the PTO pulley.
4. The belt will now be under the correct tension. Lock the adjuster nut and tighten the bottom bearing housing mounting nuts and bolts.



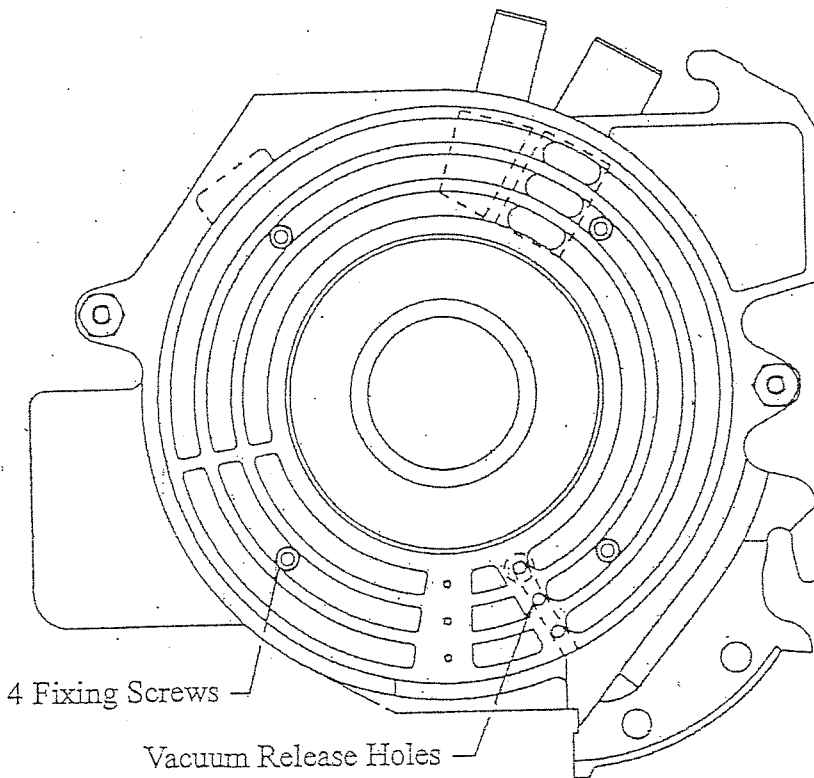
STANHAY STAR REPLACEMENT OF GALLERY BLOCKS

FITTING INSTRUCTIONS

1. Remove existing gallery block and thoroughly clean body.
2. Apply a thin bead of gasket compound such as red hermatite to the back of the gallery block where shown.
3. Fit gallery block to body, replace the four fixing screws and tighten.
4. Check that no compound has contaminated the working face of the gallery block or exuded into the vacuum release holes.



Grey Air Gallery Block - Part No 2810205
White Air Gallery Block - Part No 2810241



4 Fixing Screws

Vacuum Release Holes

FAULT FINDING GUIDE

Be familiar with all instructions in this manual before using this guide.

VACUUM READING DROPS

Reason:	Solution:
1. No seed in hoppers	Fill hoppers and re-prime seed discs
2. Seed disc(s) not holding vacuum	Check discs for damage or wear
3. Seed, seed dressing or contamination between seed discs and vacuum gallery blocks	Clean units thoroughly and clean out any blocked holes in seed discs. Check for seed migrating up around edge of seed discs. See instruction VACUUM GALLERY BLOCK
4. Damaged agitator	Check rubber fingers are securely fitted and repair or replace as necessary
5. Vacuum hose disconnected or damaged	Check hoses for free play and reconnect or replace as necessary
6. Fan unit not driving	Check PTO shaft. Remove drive cover and check belt for tension and damage. Check that top or bottom pulleys rotate freely and bearing shave not seized or collapsed.
7. Spare vacuum stubs on fan unit unplugged	Securely plug all spare vacuum and pressure stubs.

UNITS NOT PICKING UP SEED

Reason	Solution:
1. Seed disc holes too small for seed size	Check recommended hole size
2. Singulators incorrectly set	Back off, check seed pick up and re set correctly
3. Units turning too quickly	Check forward speed/gear recommendations and re-set as necessary
4. Incorrect vacuum or pressure levels	Check recommendations and re-set
5. Seed discs worn, damaged or with blocked holes	Clean units thoroughly and clean out any blocked holes in seed discs. Check discs are holding vacuum
6. Seed, seed dressing or contamination between seed discs and vacuum gallery blocks	Clean units thoroughly. Check seed flows freely into coulter. Check discs are holding vacuum.

FAULT FINDING GUIDE

- | | |
|---|---|
| 7. Unit vacuum and pressure hoses incorrectly fitted | Check and re-fit, if necessary |
| 8. Insufficient seed agitation or incorrect agitator fitted | Check rubber fingers are securely fitted, and repair or replace as necessary. Check that the agitator rotates freely. |

SEED DISC HOLES CONSTANTLY BLOCKING

Reason	Solution
1. Incorrect hole size	Check recommendations
2. Dirty or poor quality seed.	The most common cause of blocked holes, large clean seed should be used if possible for best performance

UNITS NOT DROPPING SEED CORRECTLY

Reason	Solution
1. Insufficient pressure and/or too much vacuum causing small seed to be sucked back up into unit	Check recommendation and reset accordingly. Unit must have 26 x 9mm holes at top of window
2. Seed splitters and/or coulters incorrectly fitted	See fitting instructions and re-adjust
3. Dirty, damp or plugged coulter seed chutes	Clean seed chutes and if coulters are plugged, investigate cause and rectify
4. Seed disc being clamped by centre of unit hopper side. Disc not running smoothly or seizing.	Remove disc and clean with fine abrasive. Remove vacuum gallery block. Seal and re-fit using suitable gasket sealant.

SEED LEAKING AT BACK OF COULTER

Reason	Solution
1. Metering unit castings incorrectly fitted.	Ensure casting faces are clean. Refit and lightly tighten conical nuts.

INCONSISTENT SINGULATION

Reason	Solution
1. Singulator not pressed flat onto disc	Flick singulator arm several times, then re-calibrate unit
2. Worn singulator arm	Remove singulator arm, blacken all three wearing faces with felt tip pen, grip firmly and rub on fine abrasive paper until all black ink is removed. If severely worn or damaged, replace with new. Re-fit, and re-calibrate unit.

PART NO.	MM. INS		MM. INS		MM. INS		MM. INS		MM. INS		FORWARD SPEED TO ROTATE UNIT AT 25 RPM	MAX MPH				
	12	24	48	72	96	120	144	MAX KPH								
24/15	127	5.08	63.5	2.58	31.7	1.25	21.2	0.82	15.9	0.62	12.7	0.50	10.6	0.42	2.27	1.42
24/16	135	5.33	67.7	2.67	33.9	1.33	22.5	0.89	16.9	0.67	13.5	0.53	11.3	0.44	2.42	1.51
24/17	144	5.66	71.9	2.83	36.0	1.42	24.0	0.94	18.0	0.70	14.4	0.57	12.0	0.47	2.57	1.61
24/18	152	6.00	75.2	3.00	38.1	1.50	25.4	1.00	19.0	0.75	15.2	0.60	12.7	0.50	2.72	1.70
24/19	161	6.33	80.4	3.12	40.2	1.58	26.8	1.06	20.1	0.79	16.1	0.63	13.4	0.53	2.88	1.80
24/20	169	6.66	84.6	3.29	42.3	1.67	28.2	1.11	21.2	0.83	16.9	0.67	14.1	0.56	3.03	1.89
24/21	178	7.00	88.9	3.50	44.4	1.75	29.6	1.17	22.2	0.87	17.8	0.70	14.8	0.58	3.18	2.00
24/22	185	7.33	93.1	3.66	46.5	1.83	31.0	1.22	23.3	0.92	18.6	0.73	15.5	0.61	3.33	2.08
17/16	191	7.57	95.5	3.76	47.8	1.88	31.9	1.25	23.9	0.94	19.1	0.75	15.9	0.63	3.42	2.14
17/17	203	8.00	102	4.00	50.8	2.00	33.9	1.33	25.4	1.00	20.3	0.80	16.9	0.67	3.63	2.27
17/18	215	8.47	108	4.23	53.8	2.12	35.8	1.41	26.9	1.06	21.5	0.85	17.9	0.71	3.85	2.40
17/19	227	8.94	114	4.47	56.8	2.23	37.8	1.49	28.4	1.12	22.7	0.89	18.9	0.74	4.06	2.54
17/20	239	9.41	120	4.70	59.7	2.35	39.8	1.57	29.9	1.18	23.9	0.94	19.9	0.78	4.27	2.67
17/21	251	9.88	125	4.94	62.7	2.47	41.8	1.65	31.4	1.23	25.1	0.98	20.9	0.82	4.50	2.80
17/22	263	10.3	131	5.17	65.7	2.59	43.8	1.72	32.9	1.29	26.3	1.03	21.9	0.86	4.70	2.94
13/15	294	9.23	117	4.61	58.5	2.31	39.1	1.54	29.3	1.15	23.4	0.92	19.5	0.77	4.19	2.52
13/17	266	10.5	133	5.23	66.4	2.61	44.3	1.74	33.2	1.31	26.5	1.05	22.1	0.87	4.75	2.97
13/18	281	11.1	141	5.54	70.3	2.77	46.3	1.85	35.2	1.38	28.1	1.11	23.4	0.92	5.03	3.14
13/19	297	11.7	148	5.84	74.2	2.92	48.3	1.95	37.1	1.46	29.7	1.17	24.7	0.97	5.31	3.32
13/20	313	12.3	156	6.15	78.1	3.08	52.1	2.05	39.1	1.54	31.3	1.23	26.0	1.03	5.59	3.49
13/21	328	12.9	164	6.46	82.0	3.23	54.7	2.15	41.0	1.61	32.8	1.29	27.3	1.08	5.87	3.67
13/22	344	13.5	172	6.77	85.9	3.38	57.3	2.25	43.0	1.69	34.4	1.35	28.6	1.13	6.15	3.84
11/15	277	10.9	138	5.45	69.2	2.72	46.2	1.82	34.6	1.35	27.7	1.09	23.1	0.91	4.96	3.10
11/18	332	13.1	166	6.54	83.1	3.27	53.4	2.18	41.5	1.64	33.2	1.31	27.7	1.09	5.95	3.72
11/19	351	13.8	175	6.91	87.7	3.45	58.5	2.30	43.9	1.73	35.1	1.38	29.2	1.15	6.28	3.92
11/20	369	14.5	185	7.27	92.3	3.63	61.5	2.42	46.2	1.82	36.9	1.45	30.8	1.21	6.61	4.13
11/21	388	15.3	194	7.63	96.9	3.82	64.6	2.54	48.5	1.91	38.8	1.52	32.3	1.27	6.94	4.33
11/22	405	16.0	203	8.00	102	4.00	67.7	2.67	50.8	2.00	40.6	1.60	33.9	1.33	7.27	4.54

6406330

SEED SPACING CHART 19:24

STAR DRILL (14-12 Final Drive) Seed spacing/Gear Chart-Adjustable Height Chain Drive Landwheel 19-24 PRIMARY DRIVE

PART NUMBER	INS		MM		INS		MM		INS		FORWARD SPEED TO ROTATE UNIT AT 25 RPM		FORWARD SPEED TO ROTATE UNIT AT 12 RPM	
	12	24	48	72	96	120	144	MAX KPH	MAX MPH	MAX KPH	MAX MPH	MAX KPH	MAX MPH	
24T17T13T11T	212	106	52.9	35.3	26.4	21.2	17.6	3.70	2.37	3.70	2.37	1.18	1.14	
24/15	8.89	4.44	2.22	37.6	1.11	0.89	0.74	4.04	2.52	4.04	2.52	1.94	1.21	
24/16	226	113	56.4	40.0	30.0	24.0	20.0	4.29	2.68	4.29	2.68	2.06	1.29	
24/17	240	120	60.0	42.3	31.7	25.4	21.2	4.54	2.84	4.54	2.84	2.18	1.36	
24/18	254	127	63.5	44.7	33.5	26.8	22.3	4.79	3.00	4.79	3.00	2.30	1.44	
24/19	260	134	67.0	47.0	35.3	28.2	23.5	5.05	3.15	5.05	3.15	2.42	1.51	
24/20	282	141	70.5	49.4	37.0	29.6	24.7	5.30	3.31	5.30	3.31	2.54	1.59	
24/21	296	148	74.1	51.7	38.8	31.0	25.9	5.55	3.47	5.55	3.47	2.66	1.67	
24/22	310	155	77.6	53.1	39.8	31.9	26.6	5.70	3.56	5.70	3.56	2.74	1.71	
17/16	319	159	79.7	56.4	42.3	33.9	28.2	6.05	3.78	6.05	3.78	2.90	1.81	
17/17	339	169	84.6	59.7	44.8	35.8	29.9	6.41	4.00	6.41	4.00	3.00	1.92	
17/18	358	179	89.6	63.1	47.3	37.8	31.5	6.77	4.23	6.77	4.23	3.25	2.03	
17/19	370	189	94.6	66.4	49.8	39.8	33.2	7.12	4.45	7.12	4.45	3.42	2.14	
17/20	390	199	99.6	69.7	52.3	41.8	34.8	7.48	4.67	7.48	4.67	3.59	2.24	
17/21	410	209	105	73.0	54.8	43.8	36.5	7.84	4.90	7.84	4.90	3.76	2.35	
13/15	430	219	110	76.3	57.3	45.8	38.2	8.20	5.13	8.20	5.13	3.93	2.46	
13/17	443	221	111	77.3	58.6	47.3	39.2	8.56	5.36	8.56	5.36	4.10	2.57	
13/18	469	234	117	80.1	61.8	50.6	41.2	8.92	5.59	8.92	5.59	4.27	2.68	
13/19	495	247	124	82.5	63.5	52.3	42.3	9.28	5.82	9.28	5.82	4.44	2.79	
13/20	521	260	130	86.8	66.4	55.3	44.3	9.64	6.05	9.64	6.05	4.61	2.90	
13/21	547	273	137	91.1	69.7	58.6	46.3	10.00	6.28	10.00	6.28	4.78	3.01	
13/22	573	286	143	95.5	71.6	61.8	48.3	10.36	6.51	10.36	6.51	4.95	3.12	
11/15	462	231	115	76.9	57.7	46.2	38.5	8.26	5.16	8.26	5.16	3.96	2.48	
11/18	554	277	138	92.3	69.2	55.4	46.2	9.91	6.19	9.91	6.19	4.76	2.97	
11/19	585	292	146	97.5	73.1	60.5	48.7	10.5	6.54	10.5	6.54	5.04	3.14	
11/20	616	308	154	103	76.9	61.6	51.3	11.0	6.99	11.0	6.99	5.28	3.36	
11/21	644	323	162	108	80.8	64.6	53.9	11.5	7.22	11.5	7.22	5.52	3.47	
11/22	670	339	169	113	84.6	67.7	56.4	12.1	7.57	12.1	7.57	5.81	3.63	

STAR DRILL (14-12 Final Drive) Seed spacing/Gear Chart-Adjustable Height Chain Drive Landwheel
19-40 PRIMARY DRIVE

SEED SPACING CHART 19:40

APPLICATION RATES - WHEEL TRACK 1.5m LINES 12

APPLICATION RATES FOR STAR 19T/40T PRIMARY DRIVE BED DRILL

1.5 m
12

TRACTOR WHEEL TRACK
LINES ON A BED

GEAR	GEAR	12 HOLES SEED SPACING (mm)	1 LINE SEEDS/m	2 LINE SEEDS/m	3 LINE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	212	4.7	9.4	14.2	377358	3.78	2.37	1.81	1.14
24	16	226	4.4	8.8	13.3	353982	4.04	2.52	1.94	1.21
24	17	240	4.2	8.3	12.5	333333	4.29	2.68	2.06	1.29
24	18	254	3.9	7.9	11.8	314961	4.54	2.84	2.18	1.36
24	19	268	3.7	7.5	11.2	298507	4.79	3.00	2.30	1.44
24	20	282	3.5	7.1	10.6	283688	5.05	3.15	2.42	1.51
24	21	296	3.4	6.8	10.1	270270	5.30	3.31	2.54	1.59
24	22	310	3.2	6.5	9.7	258065	5.55	3.47	2.66	1.67
17	16	319	3.1	6.3	9.4	250784	5.70	3.56	2.74	1.71
17	17	339	2.9	5.9	8.8	235988	6.05	3.78	2.90	1.81
17	18	358	2.8	5.6	8.4	223464	6.41	4.00	3.08	1.92
17	19	378	2.6	5.3	7.9	211640	6.77	4.23	3.25	2.03
17	20	398	2.5	5.0	7.5	201005	7.12	4.45	3.42	2.14
17	21	418	2.4	4.8	7.2	191388	7.48	4.67	3.59	2.24
17	22	438	2.3	4.6	6.8	182648	7.84	4.90	3.76	2.35
13	15	390	2.6	5.1	7.7	205128	7.00	4.37	3.36	2.10
13	17	443	2.3	4.5	6.8	180587	7.92	4.95	3.80	2.38
13	18	469	2.1	4.3	6.4	170576	8.38	5.24	4.02	2.52
13	19	495	2.0	4.0	6.1	161616	8.85	5.53	4.25	2.65
13	20	521	1.9	3.8	5.8	153551	9.32	5.82	4.47	2.79
13	21	547	1.8	3.7	5.5	146252	9.78	6.11	4.69	2.93
13	22	573	1.7	3.5	5.2	139616	10.20	6.40	4.90	3.07
11	15	462	2.2	4.3	6.5	173160	8.26	5.16	3.96	2.48
11	18	554	1.8	3.6	5.4	144404	9.91	6.19	4.76	2.97
11	19	585	1.7	3.4	5.1	136752	10.50	6.54	5.04	3.14
11	20	616	1.6	3.2	4.9	129870	11.00	6.99	5.28	3.36
11	21	644	2.2	4.3	6.5	172414	11.50	7.22	5.52	3.47
11	22	678	1.5	2.9	4.4	117994	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/24T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

1.5 m
12

GEAR	GEAR	24 HOLES SEED SPACING (mm)	1 LINE SEEDS/m	2 LINE SEEDS/m	3 LINE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	63.5	15.7	31.5	47.2	1259843	2.27	1.42	1.09	0.68
24	16	67.7	14.8	29.5	44.3	1181684	2.42	1.51	1.16	0.72
24	17	71.9	13.9	27.8	41.7	1112656	2.57	1.61	1.23	0.77
24	18	76.2	13.1	26.2	39.4	1049869	2.72	1.70	1.31	0.82
24	19	80.4	12.4	24.9	37.3	995025	2.88	1.80	1.38	0.86
24	20	84.6	11.8	23.6	35.5	945626	3.03	1.89	1.45	0.91
24	21	88.9	11.2	22.5	33.7	899888	3.18	2.00	1.53	0.96
24	22	93.1	10.7	21.5	32.2	859291	3.33	2.08	1.60	1.00
17	16	95.6	10.5	20.9	31.4	836820	3.42	2.14	1.64	1.03
17	17	102.0	9.8	19.6	29.4	784314	3.63	2.27	1.74	1.09
17	18	108.0	9.3	18.5	27.8	740741	3.85	2.40	1.85	1.15
17	19	114.0	8.8	17.5	26.3	701754	4.06	2.54	1.95	1.22
17	20	120.0	8.3	16.7	25.0	666667	4.27	2.67	2.05	1.28
17	21	125.0	8.0	16.0	24.0	640000	4.50	2.80	2.16	1.34
17	22	131.0	7.6	15.3	22.9	610687	4.70	2.94	2.26	1.41
13	15	117.0	8.5	17.1	25.6	683761	4.19	2.62	2.01	1.26
13	17	133.0	7.5	15.0	22.6	601504	4.75	2.97	2.28	1.43
13	18	141.0	7.1	14.2	21.3	567376	5.03	3.14	2.41	1.51
13	19	148.0	6.8	13.5	20.3	540541	5.31	3.32	2.55	1.59
13	20	156.0	6.4	12.8	19.2	512821	5.59	3.49	2.68	1.68
13	21	164.0	6.1	12.2	18.3	487805	5.87	3.67	2.82	1.76
13	22	172.0	5.8	11.6	17.4	465116	6.15	3.84	2.95	1.84
11	15	138.0	7.2	14.5	21.7	579710	4.96	3.10	2.38	1.49
11	18	166.0	6.0	12.0	18.1	481928	5.95	3.72	2.86	1.79
11	19	175.0	5.7	11.4	17.1	457143	6.28	3.92	3.01	1.88
11	20	185.0	5.4	10.8	16.2	432432	6.61	4.13	3.17	1.98
11	21	194.0	5.2	10.3	15.5	412371	6.94	4.33	3.33	2.08
11	22	203.0	4.9	9.9	14.8	394089	7.27	4.54	3.49	2.18

APPLICATION RATES FOR STAR 19T/40T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK 1.5 m
LINES ON A BED .12

GEAR	GEAR	24 HOLES SEED SPACING (mm)	1 LINE SEEDS/m	2 LINE SEEDS/m	3 LINE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	106	9.4	18.9	28.3	754717	3.78	2.37	1.81	1.14
24	16	113	8.8	17.7	26.5	707965	4.04	2.52	1.94	1.21
24	17	120	8.3	16.7	25.0	666667	4.29	2.68	2.06	1.29
24	18	127	7.9	15.7	23.6	629921	4.54	2.84	2.18	1.36
24	19	134	7.5	14.9	22.4	597015	4.79	3.00	2.30	1.44
24	20	141	7.1	14.2	21.3	567376	5.05	3.15	2.42	1.51
24	21	148	6.8	13.5	20.3	540541	5.30	3.31	2.54	1.59
24	22	155	6.5	12.9	19.4	516129	5.55	3.47	2.66	1.67
17	16	159	6.3	12.6	18.9	503145	5.70	3.56	2.74	1.71
17	17	169	5.9	11.8	17.8	473373	6.05	3.78	2.90	1.81
17	18	179	5.6	11.2	16.8	446927	6.41	4.00	3.08	1.92
17	19	189	5.3	10.6	15.9	423280	6.77	4.23	3.25	2.03
17	20	199	5.0	10.1	15.1	402010	7.12	4.45	3.42	2.14
17	21	209	4.8	9.6	14.4	382775	7.48	4.67	3.59	2.24
17	22	219	4.6	9.1	13.7	365297	7.84	4.90	3.76	2.35
13	15	195	5.1	10.3	15.4	410256	7.00	4.37	3.36	2.10
13	17	221	4.5	9.0	13.6	361991	7.92	4.95	3.80	2.38
13	18	234	4.3	8.5	12.8	341880	8.38	5.24	4.02	2.52
13	19	247	4.0	8.1	12.1	323887	8.85	5.53	4.25	2.65
13	20	260	3.8	7.7	11.5	307692	9.32	5.82	4.47	2.79
13	21	273	3.7	7.3	11.0	293040	9.78	6.11	4.69	2.93
13	22	286	3.5	7.0	10.5	279720	10.20	6.40	4.90	3.07
11	15	231	4.3	8.7	13.0	346320	8.26	5.16	3.96	2.48
11	18	277	3.6	7.2	10.8	288809	9.91	6.19	4.76	2.97
11	19	292	3.4	6.8	10.3	273973	10.50	6.54	5.04	3.14
11	20	308	3.2	6.5	9.7	259740	11.00	6.99	5.28	3.36
11	21	323	3.1	6.2	9.3	247678	11.50	7.22	5.52	3.47
11	22	339	2.9	5.9	8.8	235988	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/24T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK 1.5 m
 LINES ON A BED 12

GEAR	GEAR	48 HOLES SEED SPACING, (mm)	1 LINE SEEDS/m	2 LINE SEEDS/m	3 LINE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	31.7	31.5	63.1	94.6	2523659	2.27	1.42	1.09	0.68
24	16	33.9	29.5	59.0	88.5	2359882	2.42	1.51	1.16	0.72
24	17	36.0	27.8	55.6	83.3	2222222	2.57	1.61	1.23	0.77
24	18	38.1	26.2	52.5	78.7	2099738	2.72	1.70	1.31	0.82
24	19	40.2	24.9	49.8	74.6	1990050	2.88	1.80	1.38	0.86
24	20	42.3	23.6	47.3	70.9	1891253	3.03	1.89	1.45	0.91
24	21	44.4	22.5	45.0	67.6	1801802	3.18	2.00	1.53	0.96
24	22	46.5	21.5	43.0	64.5	1720430	3.33	2.08	1.60	1.00
17	16	47.8	20.9	41.8	62.8	1673640	3.42	2.14	1.64	1.03
17	17	50.8	19.7	39.4	59.1	1574803	3.63	2.27	1.74	1.09
17	18	53.8	18.6	37.2	55.8	1486989	3.85	2.40	1.85	1.15
17	19	56.8	17.6	35.2	52.8	1408451	4.06	2.54	1.95	1.22
17	20	59.7	16.8	33.5	50.3	1340034	4.27	2.67	2.05	1.28
17	21	62.7	15.9	31.9	47.8	1275917	4.50	2.80	2.16	1.34
17	22	65.7	15.2	30.4	45.7	1217656	4.70	2.94	2.26	1.41
13	15	58.6	17.1	34.1	51.2	1365188	4.19	2.62	2.01	1.26
13	17	66.4	15.1	30.1	45.2	1204819	4.75	2.97	2.28	1.43
13	18	70.3	14.2	28.4	42.7	1137980	5.03	3.14	2.41	1.51
13	19	74.2	13.5	27.0	40.4	1078167	5.31	3.32	2.55	1.59
13	20	78.1	12.8	25.6	38.4	1024328	5.59	3.49	2.68	1.68
13	21	82.0	12.2	24.4	36.6	975610	5.87	3.67	2.82	1.76
13	22	85.9	11.6	23.3	34.9	931315	6.15	3.84	2.95	1.84
11	15	69.2	14.5	28.9	43.4	1156069	4.96	3.10	2.38	1.49
11	18	83.1	12.0	24.1	36.1	962696	5.95	3.72	2.86	1.79
11	19	87.7	11.4	22.8	34.2	912201	6.28	3.92	3.01	1.88
11	20	92.3	10.8	21.7	32.5	866739	6.61	4.13	3.17	1.98
11	21	96.9	10.3	20.6	31.0	825593	6.94	4.33	3.33	2.08
11	22	102.0	9.8	19.6	29.4	784314	7.27	4.54	3.49	2.18

APPLICATION RATES FOR STAR 19T/40T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK 1.5 m
LINES ON A BED 12

GEAR	GEAR	48 HOLES SEED SPACING (mm)	1 LINE SEEDS/m	2 LINE SEEDS/m	3 LINE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	52.9	18.9	37.8	56.7	1512287	3.78	2.37	1.81	1.14
24	16	56.4	17.7	35.5	53.2	1418440	4.04	2.52	1.94	1.21
24	17	60.0	16.7	33.3	50.0	1333333	4.29	2.68	2.06	1.29
24	18	63.5	15.7	31.5	47.2	1259843	4.54	2.84	2.18	1.36
24	19	67.0	14.9	29.9	44.8	1194030	4.79	3.00	2.30	1.44
24	20	70.5	14.2	28.4	42.6	1134752	5.05	3.15	2.42	1.51
24	21	74.1	13.5	27.0	40.5	1079622	5.30	3.31	2.54	1.59
24	22	77.6	12.9	25.8	38.7	1030928	5.55	3.47	2.66	1.67
17	16	79.7	12.5	25.1	37.6	1003764	5.70	3.56	2.74	1.71
17	17	84.6	11.8	23.6	35.5	945626	6.05	3.78	2.90	1.81
17	18	89.6	11.2	22.3	33.5	892857	6.41	4.00	3.08	1.92
17	19	94.6	10.6	21.1	31.7	845666	6.77	4.23	3.25	2.03
17	20	99.6	10.0	20.1	30.1	803213	7.12	4.45	3.42	2.14
17	21	105.0	9.5	19.0	28.6	761905	7.48	4.67	3.59	2.24
17	22	110.0	9.1	18.2	27.3	727273	7.84	4.90	3.76	2.35
13	15	97.7	10.2	20.5	30.7	818833	7.00	4.37	3.36	2.10
13	17	111.0	9.0	18.0	27.0	720721	7.92	4.95	3.80	2.38
13	18	117.0	8.5	17.1	25.6	683761	8.38	5.24	4.02	2.52
13	19	124.0	8.1	16.1	24.2	645161	8.85	5.53	4.25	2.65
13	20	130.0	7.7	15.4	23.1	615385	9.32	5.82	4.47	2.79
13	21	137.0	7.3	14.6	21.9	583942	9.78	6.11	4.69	2.93
13	22	143.0	7.0	14.0	21.0	559441	10.20	6.40	4.90	3.07
11	15	115.0	8.7	17.4	26.1	695652	8.26	5.16	3.96	2.48
11	18	138.0	7.2	14.5	21.7	579710	9.91	6.19	4.76	2.97
11	19	146.0	6.8	13.7	20.5	547945	10.50	6.54	5.04	3.14
11	20	154.0	6.5	13.0	19.5	519481	11.00	6.99	5.28	3.36
11	21	162.0	6.2	12.3	18.5	493827	11.50	7.22	5.52	3.47
11	22	169.0	5.9	11.8	17.8	473373	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/24T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

1.5 m
12

GEAR	GEAR	72 HOLES SEED SPACING (mm)	1 LINE SEEDS/m	2 LINE SEEDS/m	3 LINE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	21.2	47.2	94.3	141.5	3773585	2.27	1.42	1.09	0.68
24	16	22.6	44.2	88.5	132.7	3539823	2.42	1.51	1.16	0.72
24	17	24.0	41.7	83.3	125.0	3333333	2.57	1.61	1.23	0.77
24	18	25.4	39.4	78.7	118.1	3149606	2.72	1.70	1.31	0.82
24	19	26.8	37.3	74.6	111.9	2985075	2.88	1.80	1.38	0.86
24	20	28.2	35.5	70.9	106.4	2836879	3.03	1.89	1.45	0.91
24	21	29.6	33.8	67.6	101.4	2702703	3.18	2.00	1.53	0.96
24	22	31.0	32.3	64.5	96.8	2580645	3.33	2.08	1.60	1.00
17	16	31.9	31.3	62.7	94.0	2507837	3.42	2.14	1.64	1.03
17	17	33.9	29.5	59.0	88.5	2359882	3.63	2.27	1.74	1.09
17	18	35.8	27.9	55.9	83.8	2234637	3.85	2.40	1.85	1.15
17	19	37.8	26.5	52.9	79.4	2116402	4.06	2.54	1.95	1.22
17	20	39.8	25.1	50.3	75.4	2010050	4.27	2.67	2.05	1.28
17	21	41.8	23.9	47.8	71.8	1913876	4.50	2.80	2.16	1.34
17	22	43.8	22.8	45.7	68.5	1826484	4.70	2.94	2.26	1.41
13	15	39.1	25.6	51.2	76.7	2046036	4.19	2.62	2.01	1.26
13	17	44.3	22.6	45.1	67.7	1805869	4.75	2.97	2.28	1.43
13	18	46.9	21.3	42.6	64.0	1705757	5.03	3.14	2.41	1.51
13	19	49.5	20.2	40.4	60.6	1616162	5.31	3.32	2.55	1.59
13	20	52.1	19.2	38.4	57.6	1535509	5.59	3.49	2.68	1.68
13	21	54.7	18.3	36.6	54.8	1462523	5.87	3.67	2.82	1.76
13	22	57.3	17.5	34.9	52.4	1396161	6.15	3.84	2.95	1.84
11	15	46.2	21.6	43.3	64.9	1731602	4.96	3.10	2.38	1.49
11	18	55.4	18.1	36.1	54.2	1444043	5.95	3.72	2.86	1.79
11	19	58.5	17.1	34.2	51.3	1367521	6.28	3.92	3.01	1.88
11	20	61.5	16.3	32.5	48.8	1300813	6.61	4.13	3.17	1.98
11	21	64.6	15.5	31.0	46.4	1238390	6.94	4.33	3.33	2.08
11	22	67.7	14.8	29.5	44.3	1181684	7.27	4.54	3.49	2.18

APPLICATION RATES FOR STAR 19T/40T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK 1.5 m
LINES ON A BED 12

GEAR	GEAR	72 HOLES SEED SPACING (mm)	1 LINE SEEDS/m	2 LINE SEEDS/m	3 LINE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	35.3	28.3	56.7	85.0	2266289	3.78	2.37	1.81	1.14
24	16	37.6	26.6	53.2	79.8	2127660	4.04	2.52	1.94	1.21
24	17	40.0	25.0	50.0	75.0	2000000	4.29	2.68	2.06	1.29
24	18	42.3	23.6	47.3	70.9	1891253	4.54	2.84	2.18	1.36
24	19	44.7	22.4	44.7	67.1	1789709	4.79	3.00	2.30	1.44
24	20	47.0	21.3	42.6	63.8	1702128	5.05	3.15	2.42	1.51
24	21	49.4	20.2	40.5	60.7	1619433	5.30	3.31	2.54	1.59
24	22	51.7	19.3	38.7	58.0	1547389	5.55	3.47	2.66	1.67
17	16	53.1	18.8	37.7	56.5	1506591	5.70	3.56	2.74	1.71
17	17	56.4	17.7	35.5	53.2	1418440	6.05	3.78	2.90	1.81
17	18	59.7	16.8	33.5	50.3	1340034	6.41	4.00	3.08	1.92
17	19	63.1	15.8	31.7	47.5	1267829	6.77	4.23	3.25	2.03
17	20	66.4	15.1	30.1	45.2	1204819	7.12	4.45	3.42	2.14
17	21	69.7	14.3	28.7	43.0	1147776	7.48	4.67	3.59	2.24
17	22	73.0	13.7	27.4	41.1	1095890	7.84	4.90	3.76	2.35
13	15	65.1	15.4	30.7	46.1	1228879	7.00	4.37	3.36	2.10
13	17	73.8	13.6	27.1	40.7	1084011	7.92	4.95	3.80	2.38
13	18	78.1	12.8	25.6	38.4	1024328	8.38	5.24	4.02	2.52
13	19	82.5	12.1	24.2	36.4	969697	8.85	5.53	4.25	2.65
13	20	86.8	11.5	23.0	34.6	921659	9.32	5.82	4.47	2.79
13	21	91.1	11.0	22.0	32.9	878156	9.78	6.11	4.69	2.93
13	22	95.5	10.5	20.9	31.4	837696	10.20	6.40	4.90	3.07
11	15	76.9	13.0	26.0	39.0	1040312	8.26	5.16	3.96	2.48
11	18	92.3	10.8	21.7	32.5	866739	9.91	6.19	4.76	2.97
11	19	97.5	10.3	20.5	30.8	820513	10.50	6.54	5.04	3.14
11	20	103	9.7	19.4	29.1	776699	11.00	6.99	5.28	3.36
11	21	108	9.3	18.5	27.8	740741	11.50	7.22	5.52	3.47
11	22	113	8.8	17.7	26.5	707965	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/24T PRIMARY DRIVE BED DRILL

1.5 m

12

TRACTOR WHEEL TRACK
LINES ON A BED

GEAR	GEAR	96 HOLES SEED SPACING (min)	1 LINE SEEDS/m	2 LINE SEEDS/m	3 LINE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	15.9	62.9	125.8	188.7	5031447	2.27	1.42	1.09	0.68
24	16	16.9	59.2	118.3	177.5	4733728	2.42	1.51	1.16	0.72
24	17	18.0	55.6	111.1	166.7	4444444	2.57	1.61	1.23	0.77
24	18	19.0	52.6	105.3	157.9	4210526	2.72	1.70	1.31	0.82
24	19	20.1	49.8	99.5	149.3	3980100	2.88	1.80	1.38	0.86
24	20	21.2	47.2	94.3	141.5	3773585	3.03	1.89	1.45	0.91
24	21	22.2	45.0	90.1	135.1	3603604	3.18	2.00	1.53	0.96
24	22	23.3	42.9	85.8	128.8	3433476	3.33	2.08	1.60	1.00
17	16	23.9	41.8	83.7	125.5	3347280	3.42	2.14	1.64	1.03
17	17	25.4	39.4	78.7	118.1	3149606	3.63	2.27	1.74	1.09
17	18	26.9	37.2	74.3	111.5	2973978	3.85	2.40	1.85	1.15
17	19	28.4	35.2	70.4	105.6	2816901	4.06	2.54	1.95	1.22
17	20	29.9	33.4	66.9	100.3	2675585	4.27	2.67	2.05	1.28
17	21	31.4	31.8	63.7	95.5	2547771	4.50	2.80	2.16	1.34
17	22	32.9	30.4	60.8	91.2	2431611	4.70	2.94	2.26	1.41
13	15	29.3	34.1	68.3	102.4	2730375	4.19	2.62	2.01	1.26
13	17	33.2	30.1	60.2	90.4	2409639	4.75	2.97	2.28	1.43
13	18	35.2	28.4	56.8	85.2	2272727	5.03	3.14	2.41	1.51
13	19	37.1	27.0	53.9	80.9	2156334	5.31	3.32	2.55	1.59
13	20	39.1	25.6	51.2	76.7	2046036	5.59	3.49	2.68	1.68
13	21	41.0	24.4	48.8	73.2	1951220	5.87	3.67	2.82	1.76
13	22	43.0	23.3	46.5	69.8	1860465	6.15	3.84	2.95	1.84
11	15	34.6	28.9	57.8	86.7	2312139	4.96	3.10	2.38	1.49
11	18	41.5	24.1	48.2	72.3	1927711	5.95	3.72	2.86	1.79
11	19	43.9	22.8	45.6	68.3	1822323	6.28	3.92	3.01	1.88
11	20	46.2	21.6	43.3	64.9	1731602	6.61	4.13	3.17	1.98
11	21	48.5	20.6	41.2	61.9	1649485	6.94	4.33	3.33	2.08
11	22	50.8	19.7	39.4	59.1	1574803	7.27	4.54	3.49	2.18

APPLICATION RATES FOR STAR 19T/40T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK 1.5 m
 LINES ON A BED 12

GEAR	GEAR	96 HOLES SEED SPACING (mm)	1 LINE SEEDS/m	2 LINE SEEDS/m	3 LINE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	26.4	37.9	75.8	113.6	3030303	3.78	2.37	1.81	1.14
24	16	28.2	35.5	70.9	106.4	2836879	4.04	2.52	1.94	1.21
24	17	30.0	33.3	66.7	100.0	2666667	4.29	2.68	2.06	1.29
24	18	31.7	31.5	63.1	94.6	2523659	4.54	2.84	2.18	1.36
24	19	33.5	29.9	59.7	89.6	2388060	4.79	3.00	2.30	1.44
24	20	35.3	28.3	56.7	85.0	2266289	5.05	3.15	2.42	1.51
24	21	37.0	27.0	54.1	81.1	2162162	5.30	3.31	2.54	1.59
24	22	38.8	25.8	51.5	77.3	2061856	5.55	3.47	2.66	1.67
17	16	39.8	25.1	50.3	75.4	2010050	5.70	3.56	2.74	1.71
17	17	42.3	23.6	47.3	70.9	1891253	6.05	3.78	2.90	1.81
17	18	44.8	22.3	44.6	67.0	1785714	6.41	4.00	3.08	1.92
17	19	47.3	21.1	42.3	63.4	1691332	6.77	4.23	3.25	2.03
17	20	49.8	20.1	40.2	60.2	1606426	7.12	4.45	3.42	2.14
17	21	52.3	19.1	38.2	57.4	1529637	7.48	4.67	3.59	2.24
17	22	54.8	18.2	36.5	54.7	1459854	7.84	4.90	3.76	2.35
13	15	48.8	20.5	41.0	61.5	1639344	7.00	4.37	3.36	2.10
13	17	55.3	18.1	36.2	54.2	1446655	7.92	4.95	3.80	2.38
13	18	58.6	17.1	34.1	51.2	1365188	8.38	5.24	4.02	2.52
13	19	61.8	16.2	32.4	48.5	1294498	8.85	5.53	4.25	2.65
13	20	65.1	15.4	30.7	46.1	1228879	9.32	5.82	4.47	2.79
13	21	68.4	14.6	29.2	43.9	1169591	9.78	6.11	4.69	2.93
13	22	71.6	14.0	27.9	41.9	1117318	10.20	6.40	4.90	3.07
11	15	57.7	17.3	34.7	52.0	1386482	8.26	5.16	3.96	2.48
11	18	69.2	14.5	28.9	43.4	1156069	9.91	6.19	4.76	2.97
11	19	73.1	13.7	27.4	41.0	1094391	10.50	6.54	5.04	3.14
11	20	76.9	13.0	26.0	39.0	1040312	11.00	6.99	5.28	3.36
11	21	80.8	12.4	24.8	37.1	990099	11.50	7.22	5.52	3.47
11	22	84.6	11.8	23.6	35.5	945626	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/24T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK 1.5 m
 LINES ON A BED 12

GEAR	GEAR	120 HOLES SEED SPACING (mm)	1 LINE SEEDS/m	2 LINE SEEDS/m	3 LINE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	12.7	78.7	157.5	236.2	6299213	2.27	1.42	1.09	0.68
24	16	13.5	74.1	148.1	222.2	5925926	2.42	1.51	1.16	0.72
24	17	14.4	69.4	138.9	208.3	5555556	2.57	1.61	1.23	0.77
24	18	15.2	65.8	131.6	197.4	5263158	2.72	1.70	1.31	0.82
24	19	16.1	62.1	124.2	186.3	4968944	2.88	1.80	1.38	0.86
24	20	16.9	59.2	118.3	177.5	4733728	3.03	1.89	1.45	0.91
24	21	17.8	56.2	112.4	168.5	4494382	3.18	2.00	1.53	0.96
24	22	18.6	53.8	107.5	161.3	4301075	3.33	2.08	1.60	1.00
17	16	19.1	52.4	104.7	157.1	4188482	3.42	2.14	1.64	1.03
17	17	20.3	49.3	98.5	147.8	3940887	3.63	2.27	1.74	1.09
17	18	21.5	46.5	93.0	139.5	3720930	3.85	2.40	1.85	1.15
17	19	22.7	44.1	88.1	132.2	3524229	4.06	2.54	1.95	1.22
17	20	23.9	41.8	83.7	125.5	3347280	4.27	2.67	2.05	1.28
17	21	25.1	39.8	79.7	119.5	3187251	4.50	2.80	2.16	1.34
17	22	26.3	38.0	76.0	114.1	3041825	4.70	2.94	2.26	1.41
13	15	23.4	42.7	85.5	128.2	3418803	4.19	2.62	2.01	1.26
13	17	26.6	37.6	75.2	112.8	3007519	4.75	2.97	2.28	1.43
13	18	28.1	35.6	71.2	106.8	2846975	5.03	3.14	2.41	1.51
13	19	29.7	33.7	67.3	101.0	2693603	5.31	3.32	2.55	1.59
13	20	31.3	31.9	63.9	95.8	2555911	5.59	3.49	2.68	1.68
13	21	32.8	30.5	61.0	91.5	2439024	5.87	3.67	2.82	1.76
13	22	34.4	29.1	58.1	87.2	2325581	6.15	3.84	2.95	1.84
11	15	27.7	36.1	72.2	108.3	2888087	4.96	3.10	2.38	1.49
11	18	33.2	30.1	60.2	90.4	2409639	5.95	3.72	2.86	1.79
11	19	35.1	28.5	57.0	85.5	2279202	6.28	3.92	3.01	1.88
11	20	36.9	27.1	54.2	81.3	2168022	6.61	4.13	3.17	1.98
11	21	38.8	25.8	51.5	77.3	2061856	6.94	4.33	3.33	2.08
11	22	40.6	24.6	49.3	73.9	1970443	7.27	4.54	3.49	2.18

APPLICATION RATES FOR STAR 19T/40T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK

1.5 m

LINES ON A BED

12

GEAR	GEAR	120 HOLES SEED SPACING (mm)	1 LINE SEEDS/m	2 LINE SEEDS/m	3 LINE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	21.2	47.2	94.3	141.5	3773585	3.78	2.37	1.81	1.14
24	16	22.6	44.2	88.5	132.7	3539823	4.04	2.52	1.94	1.21
24	17	24.0	41.7	83.3	125.0	3333333	4.29	2.68	2.06	1.29
24	18	25.4	39.4	78.7	118.1	3149606	4.54	2.84	2.18	1.36
24	19	26.8	37.3	74.6	111.9	2985075	4.79	3.00	2.30	1.44
24	20	28.2	35.5	70.9	106.4	2836879	5.05	3.15	2.42	1.51
24	21	29.6	33.8	67.6	101.4	2702703	5.30	3.31	2.54	1.59
24	22	31.0	32.3	64.5	96.8	2580645	5.55	3.47	2.66	1.67
17	16	31.9	31.3	62.7	94.0	2507837	5.70	3.56	2.74	1.71
17	17	33.9	29.5	59.0	88.5	2359882	6.05	3.78	2.90	1.81
17	18	35.8	27.9	55.9	83.8	2234637	6.41	4.00	3.08	1.92
17	19	37.8	26.5	52.9	79.4	2116402	6.77	4.23	3.25	2.03
17	20	39.8	25.1	50.3	75.4	2010050	7.12	4.45	3.42	2.14
17	21	41.8	23.9	47.8	71.8	1913876	7.48	4.67	3.59	2.24
17	22	43.8	22.8	45.7	68.5	1826484	7.84	4.90	3.76	2.35
13	15	39.1	25.6	51.2	76.7	2046036	7.00	4.37	3.36	2.10
13	17	44.3	22.6	45.1	67.7	1805869	7.92	4.95	3.80	2.38
13	18	48.7	20.5	41.1	61.6	1642710	8.38	5.24	4.02	2.52
13	19	49.5	20.2	40.4	60.6	1616162	8.85	5.53	4.25	2.65
13	20	52.1	19.2	38.4	57.6	1535509	9.32	5.82	4.47	2.79
13	21	54.7	18.3	36.6	54.8	1462523	9.78	6.11	4.69	2.93
13	22	57.3	17.5	34.9	52.4	1396161	10.20	6.40	4.90	3.07
11	15	46.2	21.6	43.3	64.9	1731602	8.26	5.16	3.96	2.48
11	18	55.4	18.1	36.1	54.2	1444043	9.91	6.19	4.76	2.97
11	19	58.5	17.1	34.2	51.3	1367521	10.50	6.54	5.04	3.14
11	20	61.6	16.2	32.5	48.7	1298701	11.00	6.99	5.28	3.36
11	21	64.6	15.5	31.0	46.4	1238390	11.50	7.22	5.52	3.47
11	22	67.7	14.8	29.5	44.3	1181684	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/24T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK 1.5 m
 LINES ON A BED 12

GEAR	GEAR	144 HOLES SEED SPACING (mm)	1 LINE SEEDS/m	2 LINE SEEDS/m	3 LINE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	10.6	94.3	188.7	283.0	7547170	2.27	1.42	1.09	0.68
24	16	11.3	88.5	177.0	265.5	7079646	2.42	1.51	1.16	0.72
24	17	12.0	83.3	166.7	250.0	6666667	2.57	1.61	1.23	0.77
24	18	12.7	78.7	157.5	236.2	6299213	2.72	1.70	1.31	0.82
24	19	13.4	74.6	149.3	223.9	5970149	2.88	1.80	1.38	0.86
24	20	14.1	70.9	141.8	212.8	5673759	3.03	1.89	1.45	0.91
24	21	14.8	67.6	135.1	202.7	5405405	3.18	2.00	1.53	0.96
24	22	15.5	64.5	129.0	193.5	5161290	3.33	2.08	1.60	1.00
17	16	15.9	62.9	125.8	188.7	5031447	3.42	2.14	1.64	1.03
17	17	16.9	59.2	118.3	177.5	4733728	3.63	2.27	1.74	1.09
17	18	17.9	55.9	111.7	167.6	4469274	3.85	2.40	1.85	1.15
17	19	18.9	52.9	105.8	158.7	4232804	4.06	2.54	1.95	1.22
17	20	19.9	50.3	100.5	150.8	4020101	4.27	2.67	2.05	1.28
17	21	20.9	47.8	95.7	143.5	3827751	4.50	2.80	2.16	1.34
17	22	21.9	45.7	91.3	137.0	3652968	4.70	2.94	2.26	1.41
13	15	19.5	51.3	102.6	153.8	4102564	4.19	2.62	2.01	1.26
13	17	22.1	45.2	90.5	135.7	3619910	4.75	2.97	2.28	1.43
13	18	23.4	42.7	85.5	128.2	3418803	5.03	3.14	2.41	1.51
13	19	24.7	40.5	81.0	121.5	3238866	5.31	3.32	2.55	1.59
13	20	26.0	38.5	76.9	115.4	3076923	5.59	3.49	2.68	1.68
13	21	27.3	36.6	73.3	109.9	2930403	5.87	3.67	2.82	1.76
13	22	28.6	35.0	69.9	104.9	2797203	6.15	3.84	2.95	1.84
11	15	23.1	43.3	86.6	129.9	3463203	4.96	3.10	2.38	1.49
11	18	27.7	36.1	72.2	108.3	2888087	5.95	3.72	2.86	1.79
11	19	29.2	34.2	68.5	102.7	2739726	6.28	3.92	3.01	1.88
11	20	30.8	32.5	64.9	97.4	2597403	6.61	4.13	3.17	1.98
11	21	32.3	31.0	61.9	92.9	2476780	6.94	4.33	3.33	2.08
11	22	33.9	29.5	59.0	88.5	2359882	7.27	4.54	3.49	2.18

APPLICATION RATES FOR STAR 19T/40T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

1.5 m
12

GEAR	GEAR	144 HOLES SEED SPACING (mm)	1 LINE SEEDS/m	2 LINE SEEDS/m	3 LINE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	17.6	56.8	113.6	170.5	4545455	3.78	2.37	1.81	1.14
24	16	18.8	53.2	106.4	159.6	4255319	4.04	2.52	1.94	1.21
24	17	20.0	50.0	100.0	150.0	4000000	4.29	2.68	2.06	1.29
24	18	21.2	47.2	94.3	141.5	3773585	4.54	2.84	2.18	1.36
24	19	22.3	44.8	89.7	134.5	3587444	4.79	3.00	2.30	1.44
24	20	23.5	42.6	85.1	127.7	3404255	5.05	3.15	2.42	1.51
24	21	24.7	40.5	81.0	121.5	3238866	5.30	3.31	2.54	1.59
24	22	25.9	38.6	77.2	115.8	3088803	5.55	3.47	2.66	1.67
17	16	26.6	37.6	75.2	112.8	3007519	5.70	3.56	2.74	1.71
17	17	28.2	35.5	70.9	106.4	2836879	6.05	3.78	2.90	1.81
17	18	29.9	33.4	66.9	100.3	2675585	6.41	4.00	3.08	1.92
17	19	31.5	31.7	63.5	95.2	2539683	6.77	4.23	3.25	2.03
17	20	33.2	30.1	60.2	90.4	2409639	7.12	4.45	3.42	2.14
17	21	34.8	28.7	57.5	86.2	2298851	7.48	4.67	3.59	2.24
17	22	36.5	27.4	54.8	82.2	2191781	7.84	4.90	3.76	2.35
13	15	32.5	30.8	61.5	92.3	2461538	7.00	4.37	3.36	2.10
13	17	36.9	27.1	54.2	81.3	2168022	7.92	4.95	3.80	2.38
13	18	39.1	25.6	51.2	76.7	2046036	8.38	5.24	4.02	2.52
13	19	41.2	24.3	48.5	72.8	1941748	8.85	5.53	4.25	2.65
13	20	43.4	23.0	46.1	69.1	1843318	9.32	5.82	4.47	2.79
13	21	45.6	21.9	43.9	65.8	1754386	9.78	6.11	4.69	2.93
13	22	47.7	21.0	41.9	62.9	1677149	10.20	6.40	4.90	3.07
11	15	38.5	26.0	51.9	77.9	2077922	8.26	5.16	3.96	2.48
11	18	46.2	21.6	43.3	64.9	1731602	9.91	6.19	4.76	2.97
11	19	48.7	20.5	41.1	61.6	1642710	10.50	6.54	5.04	3.14
11	20	51.3	19.5	39.0	58.5	1559454	11.00	6.99	5.28	3.36
11	21	53.9	18.6	37.1	55.7	1484230	11.50	7.22	5.52	3.47
11	22	56.4	17.7	35.5	53.2	1418440	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T,24T 96/96/72 PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

1.5 m
12

GEAR	GEAR	96/96/72 SEEDS/m	AVERAGE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
					max kph	max mph	max kph	max mph
24	15	173.0	57.7	4613333	2.27	1.42	1.09	0.68
24	16	162.7	54.2	4338667	2.42	1.51	1.16	0.72
24	17	152.8	50.9	4074667	2.57	1.61	1.23	0.77
24	18	144.7	48.2	3858667	2.72	1.70	1.31	0.82
24	19	136.8	45.6	3648000	2.88	1.80	1.38	0.86
24	20	129.7	43.2	3458667	3.03	1.89	1.45	0.91
24	21	123.9	41.3	3304000	3.18	2.00	1.53	0.96
24	22	118.0	39.3	3146667	3.33	2.08	1.60	1.00
17	16	115.1	38.4	3069333	3.42	2.14	1.64	1.03
17	17	108.3	36.1	2888000	3.63	2.27	1.74	1.09
17	18	102.2	34.1	2725333	3.85	2.40	1.85	1.15
17	19	96.8	32.3	2581333	4.06	2.54	1.95	1.22
17	20	92.0	30.7	2453333	4.27	2.67	2.05	1.28
17	21	87.6	29.2	2336000	4.50	2.80	2.16	1.34
17	22	83.6	27.9	2229333	4.70	2.94	2.26	1.41
13	15	93.9	31.3	2504000	4.19	2.62	2.01	1.26
13	17	82.8	27.6	2208000	4.75	2.97	2.28	1.43
13	18	78.1	26.0	2082667	5.03	3.14	2.41	1.51
13	19	74.1	24.7	1976000	5.31	3.32	2.55	1.59
13	20	70.3	23.4	1874667	5.59	3.49	2.68	1.68
13	21	67.1	22.4	1789333	5.87	3.67	2.82	1.76
13	22	64.0	21.3	1706667	6.15	3.84	2.95	1.84
11	15	79.5	26.5	2120000	4.96	3.10	2.38	1.49
11	18	66.3	22.1	1768000	5.95	3.72	2.86	1.79
11	19	62.6	20.9	1669333	6.28	3.92	3.01	1.88
11	20	59.5	19.8	1586667	6.61	4.13	3.17	1.98
11	21	56.7	18.9	1512000	6.94	4.33	3.33	2.08
11	22	54.1	18.0	1442667	7.27	4.54	3.49	2.18

APPLICATION RATES FOR STAR 19T,40T 96/96/72 PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

1.5 m
12:

GEAR	GEAR	96/96/72 SEEDS/m	AVERAGE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
					max kph	max mph	max kph	max mph
24	15	104.2	34.7	2778667	2.27	1.42	1.09	0.68
24	16	97.5	32.5	2600000	2.42	1.51	1.16	0.72
24	17	91.7	30.6	2445333	2.57	1.61	1.23	0.77
24	18	86.8	28.9	2314667	2.72	1.70	1.31	0.82
24	19	82.1	27.4	2189333	2.88	1.80	1.38	0.86
24	20	77.9	26.0	2077333	3.03	1.89	1.45	0.91
24	21	74.3	24.8	1981333	3.18	2.00	1.53	0.96
24	22	70.9	23.6	1890667	3.33	2.08	1.60	1.00
17	16	69.1	23.0	1842667	3.42	2.14	1.64	1.03
17	17	65.0	21.7	1733333	3.63	2.27	1.74	1.09
17	18	61.4	20.5	1637333	3.85	2.40	1.85	1.15
17	19	58.1	19.4	1549333	4.06	2.54	1.95	1.22
17	20	55.2	18.4	1472000	4.27	2.67	2.05	1.28
17	21	52.6	17.5	1402667	4.50	2.80	2.16	1.34
17	22	50.2	16.7	1338667	4.70	2.94	2.26	1.41
13	15	56.4	18.8	1504000	4.19	2.62	2.01	1.26
13	17	49.7	16.6	1325333	4.75	2.97	2.28	1.43
13	18	46.9	15.6	1250667	5.03	3.14	2.41	1.51
13	19	44.5	14.8	1186667	5.31	3.32	2.55	1.59
13	20	42.2	14.1	1125333	5.59	3.49	2.68	1.68
13	21	40.2	13.4	1072000	5.87	3.67	2.82	1.76
13	22	38.4	12.8	1024000	6.15	3.84	2.95	1.84
11	15	47.7	15.9	1272000	4.96	3.10	2.38	1.49
11	18	39.7	13.2	1058667	5.95	3.72	2.86	1.79
11	19	37.6	12.5	1002667	6.28	3.92	3.01	1.88
11	20	35.8	11.9	954667	6.61	4.13	3.17	1.98
11	21	34.0	11.3	906667	6.94	4.33	3.33	2.08
11	22	32.5	10.8	866667	7.27	4.54	3.49	2.18

APPLICATION RATES FOR STAR 19T,24T 144/144/108 PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

1.5 m
12

GEAR	GEAR	144/144/108 SEEDS/m	AVERAGE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
					max kph	max mph	max kph	max mph
24	15	259.4	86.5	6917333	2.27	1.42	1.09	0.68
24	16	243.4	81.1	6490667	2.42	1.51	1.16	0.72
24	17	229.2	76.4	6112000	2.57	1.61	1.23	0.77
24	18	216.5	72.2	5773333	2.72	1.70	1.31	0.82
24	19	205.2	68.4	5472000	2.88	1.80	1.38	0.86
24	20	195.0	65.0	5200000	3.03	1.89	1.45	0.91
24	21	185.8	61.9	4954667	3.18	2.00	1.53	0.96
24	22	177.4	59.1	4730667	3.33	2.08	1.60	1.00
17	16	173.0	57.7	4613333	3.42	2.14	1.64	1.03
17	17	162.7	54.2	4338667	3.63	2.27	1.74	1.09
17	18	153.6	51.2	4096000	3.85	2.40	1.85	1.15
17	19	145.5	48.5	3880000	4.06	2.54	1.95	1.22
17	20	138.2	46.1	3685333	4.27	2.67	2.05	1.28
17	21	131.6	43.9	3509333	4.50	2.80	2.16	1.34
17	22	125.6	41.9	3349333	4.70	2.94	2.26	1.41
13	15	141.0	47.0	3760000	4.19	2.62	2.01	1.26
13	17	124.4	41.5	3317333	4.75	2.97	2.28	1.43
13	18	117.5	39.2	3133333	5.03	3.14	2.41	1.51
13	19	111.3	37.1	2968000	5.31	3.32	2.55	1.59
13	20	105.8	35.3	2821333	5.59	3.49	2.68	1.68
13	21	100.7	33.6	2685333	5.87	3.67	2.82	1.76
13	22	96.2	32.1	2565333	6.15	3.84	2.95	1.84
11	15	119.0	39.7	3173333	4.96	3.10	2.38	1.49
11	18	99.3	33.1	2648000	5.95	3.72	2.86	1.79
11	19	94.2	31.4	2512000	6.28	3.92	3.01	1.88
11	20	89.3	29.8	2381333	6.61	4.13	3.17	1.98
11	21	85.1	28.4	2269333	6.94	4.33	3.33	2.08
11	22	81.1	27.0	2162667	7.27	4.54	3.49	2.18

APPLICATION RATES FOR STAR 19T,40T 144/144/108 PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

1.5 m
12

GEAR	GEAR	144/144/108 SEEDS/m	AVERAGE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
					max kph	max mph	max kph	max mph
24	15	156.3	52.1	4168000	2.27	1.42	1.09	0.68
24	16	146.3	48.8	3901333	2.42	1.51	1.16	0.72
24	17	137.5	45.8	3666667	2.57	1.61	1.23	0.77
24	18	129.7	43.2	3458667	2.72	1.70	1.31	0.82
24	19	123.3	41.1	3288000	2.88	1.80	1.38	0.86
24	20	117.0	39.0	3120000	3.03	1.89	1.45	0.91
24	21	111.3	37.1	2968000	3.18	2.00	1.53	0.96
24	22	106.2	35.4	2832000	3.33	2.08	1.60	1.00
17	16	103.4	34.5	2757333	3.42	2.14	1.64	1.03
17	17	97.5	32.5	2600000	3.63	2.27	1.74	1.09
17	18	92.0	30.7	2453333	3.85	2.40	1.85	1.15
17	19	87.3	29.1	2328000	4.06	2.54	1.95	1.22
17	20	82.8	27.6	2208000	4.27	2.67	2.05	1.28
17	21	79.0	26.3	2106667	4.50	2.80	2.16	1.34
17	22	75.3	25.1	2008000	4.70	2.94	2.26	1.41
13	15	84.6	28.2	2256000	4.19	2.62	2.01	1.26
13	17	74.5	24.8	1986667	4.75	2.97	2.28	1.43
13	18	70.3	23.4	1874667	5.03	3.14	2.41	1.51
13	19	66.7	22.2	1778667	5.31	3.32	2.55	1.59
13	20	63.4	21.1	1690667	5.59	3.49	2.68	1.68
13	21	60.3	20.1	1608000	5.87	3.67	2.82	1.76
13	22	57.7	19.2	1538667	6.15	3.84	2.95	1.84
11	15	71.4	23.8	1904000	4.96	3.10	2.38	1.49
11	18	59.5	19.8	1586667	5.95	3.72	2.86	1.79
11	19	56.5	18.8	1506667	6.28	3.92	3.01	1.88
11	20	53.6	17.9	1429333	6.61	4.13	3.17	1.98
11	21	51.0	17.0	1360000	6.94	4.33	3.33	2.08
11	22	48.8	16.3	1301333	7.27	4.54	3.49	2.18

APPLICATION RATES - WHEEL TRACK 1.8m LINES 12

APPLICATION RATES FOR STAR 19T/24T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED
1.8 m
12.

GEAR	GEAR	12 HOLES SEED SPACING (mm)	1 LINE SEEDS/m	2 LINE SEEDS/m	3 LINE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	127	7.9	15.7	23.6	524934	2.27	1.42	1.09	0.68
24	16	135	7.4	14.8	22.2	493827	2.42	1.51	1.16	0.72
24	17	144	6.9	13.9	20.8	462963	2.57	1.61	1.23	0.77
24	18	152	6.6	13.2	19.7	438596	2.72	1.70	1.31	0.82
24	19	161	6.2	12.4	18.6	414079	2.88	1.80	1.38	0.86
24	20	169	5.9	11.8	17.8	394477	3.03	1.89	1.45	0.91
24	21	178	5.6	11.2	16.9	374532	3.18	2.00	1.53	0.96
24	22	186	5.4	10.8	16.1	358423	3.33	2.08	1.60	1.00
17	16	191	5.2	10.5	15.7	349040	3.42	2.14	1.64	1.03
17	17	203	4.9	9.9	14.8	328407	3.63	2.27	1.74	1.09
17	18	215	4.7	9.3	14.0	310078	3.85	2.40	1.85	1.15
17	19	227	4.4	8.8	13.2	293686	4.06	2.54	1.95	1.22
17	20	239	4.2	8.4	12.6	278940	4.27	2.67	2.05	1.28
17	21	251	4.0	8.0	12.0	265604	4.50	2.80	2.16	1.34
17	22	263	3.8	7.6	11.4	253485	4.70	2.94	2.26	1.41
13	15	234	4.3	8.5	12.8	284900	4.19	2.62	2.01	1.26
13	17	266	3.8	7.5	11.3	250627	4.75	2.97	2.28	1.43
13	18	281	3.6	7.1	10.7	237248	5.03	3.14	2.41	1.51
13	19	297	3.4	6.7	10.1	224467	5.31	3.32	2.55	1.59
13	20	313	3.2	6.4	9.6	212993	5.59	3.49	2.68	1.68
13	21	328	3.0	6.1	9.1	203252	5.87	3.67	2.82	1.76
13	22	344	2.9	5.8	8.7	193798	6.15	3.84	2.95	1.84
11	15	277	3.6	7.2	10.8	240674	4.96	3.10	2.38	1.49
11	18	332	3.0	6.0	9.0	200803	5.95	3.72	2.86	1.79
11	19	351	2.8	5.7	8.5	189934	6.28	3.92	3.01	1.88
11	20	369	2.7	5.4	8.1	180668	6.61	4.13	3.17	1.98
11	21	388	2.6	5.2	7.7	171821	6.94	4.33	3.33	2.08
11	22	406	2.5	4.9	7.4	164204	7.27	4.54	3.49	2.18

APPLICATION RATES FOR STAR 19T/24T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK 1.8 m
 LINES ON A BED 12

GEAR	GEAR	24 HOLES SEED SPACING (mm)	1 LINE SEEDS/m	2 LINE SEEDS/m	3 LINE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	63.5	15.7	31.5	47.2	1049869	2.27	1.42	1.09	0.68
24	16	67.7	14.8	29.5	44.3	984737	2.42	1.51	1.16	0.72
24	17	71.9	13.9	27.8	41.7	927214	2.57	1.61	1.23	0.77
24	18	76.2	13.1	26.2	39.4	874891	2.72	1.70	1.31	0.82
24	19	80.4	12.4	24.9	37.3	829187	2.88	1.80	1.38	0.86
24	20	84.6	11.8	23.6	35.5	788022	3.03	1.89	1.45	0.91
24	21	88.9	11.2	22.5	33.7	749906	3.18	2.00	1.53	0.96
24	22	93.1	10.7	21.5	32.2	716076	3.33	2.08	1.60	1.00
17	16	95.6	10.5	20.9	31.4	697350	3.42	2.14	1.64	1.03
17	17	102.0	9.8	19.6	29.4	653595	3.63	2.27	1.74	1.09
17	18	108.0	9.3	18.5	27.8	617284	3.85	2.40	1.85	1.15
17	19	114.0	8.8	17.5	26.3	584795	4.06	2.54	1.95	1.22
17	20	120.0	8.3	16.7	25.0	555556	4.27	2.67	2.05	1.28
17	21	125.0	8.0	16.0	24.0	533333	4.50	2.80	2.16	1.34
17	22	131.0	7.6	15.3	22.9	509906	4.70	2.94	2.26	1.41
13	15	117.0	8.5	17.1	25.6	569801	4.19	2.62	2.01	1.26
13	17	133.0	7.5	15.0	22.6	501253	4.75	2.97	2.28	1.43
13	18	141.0	7.1	14.2	21.3	472813	5.03	3.14	2.41	1.51
13	19	148.0	6.8	13.5	20.3	450450	5.31	3.32	2.55	1.59
13	20	156.0	6.4	12.8	19.2	427350	5.59	3.49	2.68	1.68
13	21	164.0	6.1	12.2	18.3	406504	5.87	3.67	2.82	1.76
13	22	172.0	5.8	11.6	17.4	387597	6.15	3.84	2.95	1.84
11	15	138.0	7.2	14.5	21.7	483092	4.96	3.10	2.38	1.49
11	18	166.0	6.0	12.0	18.1	401606	5.95	3.72	2.86	1.79
11	19	175.0	5.7	11.4	17.1	380952	6.28	3.92	3.01	1.88
11	20	185.0	5.4	10.8	16.2	360360	6.61	4.13	3.17	1.98
11	21	194.0	5.2	10.3	15.5	343643	6.94	4.33	3.33	2.08
11	22	203.0	4.9	9.9	14.8	328407	7.27	4.54	3.49	2.18

APPLICATION RATES FOR STAR 19T/40T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A-BED

1.8 m
12

GEAR	GEAR	24 HOLES SEED SPACING (mm)	1 LINE SEEDS/m	2 LINE SEEDS/m	3 LINE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	106	9.4	18.9	28.3	628931	3.78	2.37	1.81	1.14
24	16	113	8.8	17.7	26.5	589971	4.04	2.52	1.94	1.21
24	17	120	8.3	16.7	25.0	555556	4.29	2.68	2.06	1.29
24	18	127	7.9	15.7	23.6	524934	4.54	2.84	2.18	1.36
24	19	134	7.5	14.9	22.4	497512	4.79	3.00	2.30	1.44
24	20	141	7.1	14.2	21.3	472813	5.05	3.15	2.42	1.51
24	21	148	6.8	13.5	20.3	450450	5.30	3.31	2.54	1.59
24	22	155	6.5	12.9	19.4	430108	5.55	3.47	2.66	1.67
17	16	159	6.3	12.6	18.9	419287	5.70	3.56	2.74	1.71
17	17	169	5.9	11.8	17.8	394477	6.05	3.78	2.90	1.81
17	18	179	5.6	11.2	16.8	372439	6.41	4.00	3.08	1.92
17	19	189	5.3	10.6	15.9	352734	6.77	4.23	3.25	2.03
17	20	199	5.0	10.1	15.1	335008	7.12	4.45	3.42	2.14
17	21	208	4.8	9.6	14.4	318979	7.48	4.67	3.59	2.24
17	22	219	4.6	9.1	13.7	304414	7.84	4.90	3.76	2.35
13	15	195	5.1	10.3	15.4	341880	7.00	4.37	3.36	2.10
13	17	221	4.5	9.0	13.6	301659	7.92	4.95	3.80	2.38
13	18	234	4.3	8.5	12.8	284900	8.38	5.24	4.02	2.52
13	19	247	4.0	8.1	12.1	269906	8.85	5.53	4.25	2.65
13	20	260	3.8	7.7	11.5	256410	9.32	5.82	4.47	2.79
13	21	273	3.7	7.3	11.0	244200	9.78	6.11	4.69	2.93
13	22	286	3.5	7.0	10.5	233100	10.20	6.40	4.90	3.07
11	15	231	4.3	8.7	13.0	288600	8.26	5.16	3.96	2.48
11	18	277	3.6	7.2	10.8	240674	9.91	6.19	4.76	2.97
11	19	292	3.4	6.8	10.3	228311	10.50	6.54	5.04	3.14
11	20	308	3.2	6.5	9.7	216450	11.00	6.99	5.28	3.36
11	21	323	3.1	6.2	9.3	206398	11.50	7.22	5.52	3.47
11	22	339	2.9	5.9	8.8	196657	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/24T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

1.8 m

12

GEAR	GEAR	48 HOLES SEED SPACING (mm)	1 LINE SEEDS/m	2 LINE SEEDS/m	3 LINE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	31.7	31.5	63.1	94.6	2103049	2.27	1.42	1.09	0.68
24	16	33.9	29.5	59.0	88.5	1966568	2.42	1.51	1.16	0.72
24	17	36.0	27.8	55.6	83.3	1851852	2.57	1.61	1.23	0.77
24	18	38.1	26.2	52.5	78.7	1749781	2.72	1.70	1.31	0.82
24	19	40.2	24.9	49.8	74.6	1658375	2.88	1.80	1.38	0.86
24	20	42.3	23.6	47.3	70.9	1576044	3.03	1.89	1.45	0.91
24	21	44.4	22.5	45.0	67.6	1501502	3.18	2.00	1.53	0.96
24	22	46.5	21.5	43.0	64.5	1433692	3.33	2.08	1.60	1.00
17	16	47.8	20.9	41.8	62.8	1394700	3.42	2.14	1.64	1.03
17	17	50.8	19.7	39.4	59.1	1312336	3.63	2.27	1.74	1.09
17	18	53.8	18.6	37.2	55.8	1239157	3.85	2.40	1.85	1.15
17	19	56.8	17.6	35.2	52.8	1173709	4.06	2.54	1.95	1.22
17	20	59.7	16.8	33.5	50.3	1116695	4.27	2.67	2.05	1.28
17	21	62.7	15.9	31.9	47.8	1063264	4.50	2.80	2.16	1.34
17	22	65.7	15.2	30.4	45.7	1014713	4.70	2.94	2.26	1.41
13	15	58.6	17.1	34.1	51.2	1137656	4.19	2.62	2.01	1.26
13	17	66.4	15.1	30.1	45.2	1004016	4.75	2.97	2.28	1.43
13	18	70.3	14.2	28.4	42.7	948317	5.03	3.14	2.41	1.51
13	19	74.2	13.5	27.0	40.4	898473	5.31	3.32	2.55	1.59
13	20	78.1	12.8	25.6	38.4	853606	5.59	3.49	2.68	1.68
13	21	82.0	12.2	24.4	36.6	813008	5.87	3.67	2.82	1.76
13	22	85.9	11.6	23.3	34.9	776096	6.15	3.84	2.95	1.84
11	15	69.2	14.5	28.9	43.4	963391	4.96	3.10	2.38	1.49
11	18	83.1	12.0	24.1	36.1	802246	5.95	3.72	2.86	1.79
11	19	87.7	11.4	22.8	34.2	760167	6.28	3.92	3.01	1.88
11	20	92.3	10.8	21.7	32.5	722282	6.61	4.13	3.17	1.98
11	21	96.9	10.3	20.6	31.0	687994	6.94	4.33	3.33	2.08
11	22	102.0	9.8	19.6	29.4	653595	7.27	4.54	3.49	2.18

APPLICATION RATES FOR STAR 19T/40T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

1.8 m
12

GEAR	GEAR	48 HOLES SEED SPACING (mm)	1 LINE SEEDS/m	2 LINE SEEDS/m	3 LINE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	52.9	18.9	37.8	56.7	1260239	3.78	2.37	1.81	1.14
24	16	56.4	17.7	35.5	53.2	1182033	4.04	2.52	1.94	1.21
24	17	60.0	16.7	33.3	50.0	1111111	4.29	2.68	2.06	1.29
24	18	63.5	15.7	31.5	47.2	1049869	4.54	2.84	2.18	1.36
24	19	67.0	14.9	29.9	44.8	995025	4.79	3.00	2.30	1.44
24	20	70.5	14.2	28.4	42.6	945626	5.05	3.15	2.42	1.51
24	21	74.1	13.5	27.0	40.5	899685	5.30	3.31	2.54	1.59
24	22	77.6	12.9	25.8	38.7	859107	5.55	3.47	2.66	1.67
17	16	79.7	12.5	25.1	37.6	836470	5.70	3.56	2.74	1.71
17	17	84.6	11.8	23.6	35.5	788022	6.05	3.78	2.90	1.81
17	18	89.6	11.2	22.3	33.5	744048	6.41	4.00	3.08	1.92
17	19	94.6	10.6	21.1	31.7	704722	6.77	4.23	3.25	2.03
17	20	99.6	10.0	20.1	30.1	669344	7.12	4.45	3.42	2.14
17	21	105.0	9.5	19.0	28.6	634921	7.48	4.67	3.59	2.24
17	22	110.0	9.1	18.2	27.3	606061	7.84	4.90	3.76	2.35
13	15	97.7	10.2	20.5	30.7	682361	7.00	4.37	3.36	2.10
13	17	111.0	9.0	18.0	27.0	600601	7.92	4.95	3.80	2.38
13	18	117.0	8.5	17.1	25.6	569801	8.38	5.24	4.02	2.52
13	19	124.0	8.1	16.1	24.2	537634	8.85	5.53	4.25	2.65
13	20	130.0	7.7	15.4	23.1	512821	9.32	5.82	4.47	2.79
13	21	137.0	7.3	14.6	21.9	486618	9.78	6.11	4.69	2.93
13	22	143.0	7.0	14.0	21.0	466200	10.20	6.40	4.90	3.07
11	15	115.0	8.7	17.4	26.1	579710	8.26	5.16	3.96	2.48
11	18	138.0	7.2	14.5	21.7	483092	9.91	6.19	4.76	2.97
11	19	146.0	6.8	13.7	20.5	456621	10.50	6.54	5.04	3.14
11	20	154.0	6.5	13.0	19.5	432900	11.00	6.99	5.28	3.36
11	21	162.0	6.2	12.3	18.5	411523	11.50	7.22	5.52	3.47
11	22	169.0	5.9	11.8	17.8	394477	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/24T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

1.8 m
12

GEAR	GEAR	72 HOLES SEED SPACING (mm)	1 LINE SEEDS/m	2 LINE SEEDS/m	3 LINE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	21.2	47.2	94.3	141.5	3144654	2.27	1.42	1.09	0.68
24	16	22.6	44.2	88.5	132.7	2949853	2.42	1.51	1.16	0.72
24	17	24.0	41.7	83.3	125.0	2777778	2.57	1.61	1.23	0.77
24	18	25.4	39.4	78.7	118.1	2624672	2.72	1.70	1.31	0.82
24	19	26.8	37.3	74.6	111.9	2487562	2.88	1.80	1.38	0.86
24	20	28.2	35.5	70.9	106.4	2364066	3.03	1.89	1.45	0.91
24	21	29.6	33.8	67.6	101.4	2252252	3.18	2.00	1.53	0.96
24	22	31.0	32.3	64.5	96.8	2150538	3.33	2.08	1.60	1.00
17	16	31.9	31.3	62.7	94.0	2089864	3.42	2.14	1.64	1.03
17	17	33.9	29.5	59.0	88.5	1966568	3.63	2.27	1.74	1.09
17	18	35.8	27.9	55.9	83.8	1862197	3.85	2.40	1.85	1.15
17	19	37.8	26.5	52.9	79.4	1763668	4.06	2.54	1.95	1.22
17	20	39.8	25.1	50.3	75.4	1675042	4.27	2.67	2.05	1.28
17	21	41.8	23.9	47.8	71.8	1594896	4.50	2.80	2.16	1.34
17	22	43.8	22.8	45.7	68.5	1522070	4.70	2.94	2.26	1.41
13	15	39.1	25.6	51.2	76.7	1705030	4.19	2.62	2.01	1.26
13	17	44.3	22.6	45.1	67.7	1504891	4.75	2.97	2.28	1.43
13	18	46.9	21.3	42.6	64.0	1421464	5.03	3.14	2.41	1.51
13	19	49.5	20.2	40.4	60.6	1346801	5.31	3.32	2.55	1.59
13	20	52.1	19.2	38.4	57.6	1279591	5.59	3.49	2.68	1.68
13	21	54.7	18.3	36.6	54.8	1218769	5.87	3.67	2.82	1.76
13	22	57.3	17.5	34.9	52.4	1163467	6.15	3.84	2.95	1.84
11	15	46.2	21.6	43.3	64.9	1443001	4.96	3.10	2.38	1.49
11	18	55.4	18.1	36.1	54.2	1203369	5.95	3.72	2.86	1.79
11	19	58.5	17.1	34.2	51.3	1139601	6.28	3.92	3.01	1.88
11	20	61.5	16.3	32.5	48.8	1084011	6.61	4.13	3.17	1.98
11	21	64.6	15.5	31.0	46.4	1031992	6.94	4.33	3.33	2.08
11	22	67.7	14.8	29.5	44.3	984737	7.27	4.54	3.49	2.18

APPLICATION RATES FOR STAR 19T/40T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK 1.8 m
LINES ON A BED 12

GEAR	GEAR	72 HOLES SEED SPACING (mm)	1 LINE SEEDS/m	2 LINE SEEDS/m	3 LINE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	35.3	28.3	56.7	85.0	1888574	3.78	2.37	1.81	1.14
24	16	37.6	26.6	53.2	79.8	1773050	4.04	2.52	1.94	1.21
24	17	40.0	25.0	50.0	75.0	1666667	4.29	2.68	2.06	1.29
24	18	42.3	23.6	47.3	70.9	1576044	4.54	2.84	2.18	1.36
24	19	44.7	22.4	44.7	67.1	1491424	4.79	3.00	2.30	1.44
24	20	47.0	21.3	42.6	63.8	1418440	5.05	3.15	2.42	1.51
24	21	49.4	20.2	40.5	60.7	1349528	5.30	3.31	2.54	1.59
24	22	51.7	19.3	38.7	58.0	1289491	5.55	3.47	2.66	1.67
17	16	53.1	18.8	37.7	56.5	1255493	5.70	3.56	2.74	1.71
17	17	56.4	17.7	35.5	53.2	1182033	6.05	3.78	2.90	1.81
17	18	59.7	16.8	33.5	50.3	1116695	6.41	4.00	3.08	1.92
17	19	63.1	15.8	31.7	47.5	1056524	6.77	4.23	3.25	2.03
17	20	66.4	15.1	30.1	45.2	1004016	7.12	4.45	3.42	2.14
17	21	69.7	14.3	28.7	43.0	956480	7.48	4.67	3.59	2.24
17	22	73.0	13.7	27.4	41.1	913242	7.84	4.90	3.76	2.35
13	15	65.1	15.4	30.7	46.1	1024066	7.00	4.37	3.36	2.10
13	17	73.8	13.6	27.1	40.7	903342	7.92	4.95	3.80	2.38
13	18	78.1	12.8	25.6	38.4	853606	8.38	5.24	4.02	2.52
13	19	82.5	12.1	24.2	36.4	808081	8.85	5.53	4.25	2.65
13	20	86.8	11.5	23.0	34.6	768049	9.32	5.82	4.47	2.79
13	21	91.1	11.0	22.0	32.9	731797	9.78	6.11	4.69	2.93
13	22	95.5	10.5	20.9	31.4	698080	10.20	6.40	4.90	3.07
11	15	76.9	13.0	26.0	39.0	866927	8.26	5.16	3.96	2.48
11	18	92.3	10.8	21.7	32.5	722282	9.91	6.19	4.76	2.97
11	19	97.5	10.3	20.5	30.8	683761	10.50	6.54	5.04	3.14
11	20	103	9.7	19.4	29.1	647249	11.00	6.99	5.28	3.36
11	21	108	9.3	18.5	27.8	617284	11.50	7.22	5.52	3.47
11	22	113	8.8	17.7	26.5	589971	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/24T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

1.8 m
12

GEAR	GEAR	96 HOLES SEED SPACING (mm)	1 LINE SEEDS/m	2 LINE SEEDS/m	3 LINE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	15.9	62.9	125.8	188.7	4192872	2.27	1.42	1.09	0.68
24	16	16.9	59.2	118.3	177.5	3944773	2.42	1.51	1.16	0.72
24	17	18.0	55.6	111.1	166.7	3703704	2.57	1.61	1.23	0.77
24	18	19.0	52.6	105.3	157.9	3508772	2.72	1.70	1.31	0.82
24	19	20.1	49.8	99.5	149.3	3316750	2.88	1.80	1.38	0.86
24	20	21.2	47.2	94.3	141.5	3144654	3.03	1.89	1.45	0.91
24	21	22.2	45.0	90.1	135.1	3003003	3.18	2.00	1.53	0.96
24	22	23.3	42.9	85.8	128.8	2861230	3.33	2.08	1.60	1.00
17	16	23.9	41.8	83.7	125.5	2789400	3.42	2.14	1.64	1.03
17	17	25.4	39.4	78.7	118.1	2624672	3.63	2.27	1.74	1.09
17	18	26.9	37.2	74.3	111.5	2478315	3.85	2.40	1.85	1.15
17	19	28.4	35.2	70.4	105.6	2347418	4.06	2.54	1.95	1.22
17	20	29.9	33.4	66.9	100.3	2229654	4.27	2.67	2.05	1.28
17	21	31.4	31.8	63.7	95.5	2123142	4.50	2.80	2.16	1.34
17	22	32.9	30.4	60.8	91.2	2026342	4.70	2.94	2.26	1.41
13	15	29.3	34.1	68.3	102.4	2275313	4.19	2.62	2.01	1.26
13	17	33.2	30.1	60.2	90.4	2008032	4.75	2.97	2.28	1.43
13	18	35.2	28.4	56.8	85.2	1893939	5.03	3.14	2.41	1.51
13	19	37.1	27.0	53.9	80.9	1796945	5.31	3.32	2.55	1.59
13	20	39.1	25.6	51.2	76.7	1705030	5.59	3.49	2.68	1.68
13	21	41.0	24.4	48.8	73.2	1626016	5.87	3.67	2.82	1.76
13	22	43.0	23.3	46.5	69.8	1550388	6.15	3.84	2.95	1.84
11	15	34.6	28.9	57.8	86.7	1926782	4.96	3.10	2.38	1.49
11	18	41.5	24.1	48.2	72.3	1606426	5.95	3.72	2.86	1.79
11	19	43.9	22.8	45.6	68.3	1518603	6.28	3.92	3.01	1.88
11	20	46.2	21.6	43.3	64.9	1443001	6.61	4.13	3.17	1.98
11	21	48.5	20.6	41.2	61.9	1374570	6.94	4.33	3.33	2.08
11	22	50.8	19.7	39.4	59.1	1312336	7.27	4.54	3.49	2.18

APPLICATION RATES FOR STAR 19T/40T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

1.8 m
12

GEAR	GEAR	96 HOLES SEED SPACING (mm)	1 LINE SEEDS/m	2 LINE SEEDS/m	3 LINE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	26.4	37.9	75.8	113.6	2525253	3.78	2.37	1.81	1.14
24	16	28.2	35.5	70.9	106.4	2364066	4.04	2.52	1.94	1.21
24	17	30.0	33.3	66.7	100.0	2222222	4.29	2.68	2.06	1.29
24	18	31.7	31.5	63.1	94.6	2103049	4.54	2.84	2.18	1.36
24	19	33.5	29.9	59.7	89.6	1990050	4.79	3.00	2.30	1.44
24	20	35.3	28.3	56.7	85.0	1888574	5.05	3.15	2.42	1.51
24	21	37.0	27.0	54.1	81.1	1801802	5.30	3.31	2.54	1.59
24	22	38.8	25.8	51.5	77.3	1718213	5.55	3.47	2.66	1.67
17	16	39.8	25.1	50.3	75.4	1675042	5.70	3.56	2.74	1.71
17	17	42.3	23.6	47.3	70.9	1576044	6.05	3.78	2.90	1.81
17	18	44.8	22.3	44.6	67.0	1488095	6.41	4.00	3.08	1.92
17	19	47.3	21.1	42.3	63.4	1409443	6.77	4.23	3.25	2.03
17	20	49.8	20.1	40.2	60.2	1338688	7.12	4.45	3.42	2.14
17	21	52.3	19.1	38.2	57.4	1274697	7.48	4.67	3.59	2.24
17	22	54.8	18.2	36.5	54.7	1216545	7.84	4.90	3.76	2.35
13	15	48.8	20.5	41.0	61.5	1366120	7.00	4.37	3.36	2.10
13	17	55.3	18.1	36.2	54.2	1205546	7.92	4.95	3.80	2.38
13	18	58.6	17.1	34.1	51.2	1137656	8.38	5.24	4.02	2.52
13	19	61.8	16.2	32.4	48.5	1078749	8.85	5.53	4.25	2.65
13	20	65.1	15.4	30.7	46.1	1024066	9.32	5.82	4.47	2.79
13	21	68.4	14.6	29.2	43.9	974659	9.78	6.11	4.69	2.93
13	22	71.6	14.0	27.9	41.9	931099	10.20	6.40	4.90	3.07
11	15	57.7	17.3	34.7	52.0	1155402	8.26	5.16	3.96	2.48
11	18	69.2	14.5	28.9	43.4	963391	9.91	6.19	4.76	2.97
11	19	73.1	13.7	27.4	41.0	911993	10.50	6.54	5.04	3.14
11	20	76.9	13.0	26.0	39.0	866927	11.00	6.99	5.28	3.36
11	21	80.8	12.4	24.8	37.1	825083	11.50	7.22	5.52	3.47
11	22	84.6	11.8	23.6	35.5	788022	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T,24T 96/96/72 PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

1.8 m
12

GEAR	GEAR	96/96/72 SEEDS/m	AVERAGE S/M SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
					max kph	max mph	max kph	max mph
24	15	173.0	57.7	3844444	2.27	1.42	1.09	0.68
24	16	162.7	54.2	3615556	2.42	1.51	1.16	0.72
24	17	152.8	50.9	3395556	2.57	1.61	1.23	0.77
24	18	144.7	48.2	3215556	2.72	1.70	1.31	0.82
24	19	136.8	45.6	3040000	2.88	1.80	1.38	0.86
24	20	129.7	43.2	2882222	3.03	1.89	1.45	0.91
24	21	123.9	41.3	2753333	3.18	2.00	1.53	0.96
24	22	118.0	39.3	2622222	3.33	2.08	1.60	1.00
17	16	115.1	38.4	2557778	3.42	2.14	1.64	1.03
17	17	108.3	36.1	2406667	3.63	2.27	1.74	1.09
17	18	102.2	34.1	2271111	3.85	2.40	1.85	1.15
17	19	96.8	32.3	2151111	4.06	2.54	1.95	1.22
17	20	92.0	30.7	2044444	4.27	2.67	2.05	1.28
17	21	87.6	29.2	1946667	4.50	2.80	2.16	1.34
17	22	83.6	27.9	1857778	4.70	2.94	2.26	1.41
13	15	93.9	31.3	2086667	4.19	2.62	2.01	1.26
13	17	82.8	27.6	1840000	4.75	2.97	2.28	1.43
13	18	78.1	26.0	1735556	5.03	3.14	2.41	1.51
13	19	74.1	24.7	1646667	5.31	3.32	2.55	1.59
13	20	70.3	23.4	1562222	5.59	3.49	2.68	1.68
13	21	67.1	22.4	1491111	5.87	3.67	2.82	1.76
13	22	64.0	21.3	1422222	6.15	3.84	2.95	1.84
11	15	79.5	26.5	1766667	4.96	3.10	2.38	1.49
11	18	66.3	22.1	1473333	5.95	3.72	2.86	1.79
11	19	62.6	20.9	1391111	6.28	3.92	3.01	1.88
11	20	59.5	19.8	1322222	6.61	4.13	3.17	1.98
11	21	56.7	18.9	1260000	6.94	4.33	3.33	2.08
11	22	54.1	18.0	1202222	7.27	4.54	3.49	2.18

APPLICATION RATES FOR STAR 19T, 40T 96/96/72 PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

1.8 m
12

GEAR	GEAR	96/96/72 SEEDS/m	AVERAGE S/M SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
					max kph	max mph	max kph	max mph
24	15	104.2	34.7	2315556	2.27	1.42	1.09	0.68
24	16	97.5	32.5	2166667	2.42	1.51	1.16	0.72
24	17	91.7	30.6	2037778	2.57	1.61	1.23	0.77
24	18	86.8	28.9	1928889	2.72	1.70	1.31	0.82
24	19	82.1	27.4	1824444	2.88	1.80	1.38	0.86
24	20	77.9	26.0	1731111	3.03	1.89	1.45	0.91
24	21	74.3	24.8	1651111	3.18	2.00	1.53	0.96
24	22	70.9	23.6	1575556	3.33	2.08	1.60	1.00
17	16	69.1	23.0	1535556	3.42	2.14	1.64	1.03
17	17	65.0	21.7	1444444	3.63	2.27	1.74	1.09
17	18	61.4	20.5	1364444	3.85	2.40	1.85	1.15
17	19	58.1	19.4	1291111	4.06	2.54	1.95	1.22
17	20	55.2	18.4	1226667	4.27	2.67	2.05	1.28
17	21	52.6	17.5	1168889	4.50	2.80	2.16	1.34
17	22	50.2	16.7	1115556	4.70	2.94	2.26	1.41
13	15	56.4	18.8	1253333	4.19	2.62	2.01	1.26
13	17	49.7	16.6	1104444	4.75	2.97	2.28	1.43
13	18	46.9	15.6	1042222	5.03	3.14	2.41	1.51
13	19	44.5	14.8	988889	5.31	3.32	2.55	1.59
13	20	42.2	14.1	937778	5.59	3.49	2.68	1.68
13	21	40.2	13.4	893333	5.87	3.67	2.82	1.76
13	22	38.4	12.8	853333	6.15	3.84	2.95	1.84
11	15	47.7	15.9	1060000	4.96	3.10	2.38	1.49
11	18	39.7	13.2	882222	5.95	3.72	2.86	1.79
11	19	37.6	12.5	835556	6.28	3.92	3.01	1.88
11	20	35.8	11.9	795556	6.61	4.13	3.17	1.98
11	21	34.0	11.3	755556	6.94	4.33	3.33	2.08
11	22	32.5	10.8	722222	7.27	4.54	3.49	2.18

APPLICATION RATES FOR STAR 19T/24T PRIMARY DRIVE BED DRILL

1.8 m

TRACTOR WHEEL TRACK

12

LINES ON A BED.

GEAR	GEAR	120 HOLES SEED SPACING (mm)	1 LINE SEEDS/m	2 LINE SEEDS/m	3 LINE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	12.7	78.7	157.5	236.2	5249344	2.27	1.42	1.09	0.68
24	16	13.5	74.1	148.1	222.2	4938272	2.42	1.51	1.16	0.72
24	17	14.4	69.4	138.9	208.3	4629630	2.57	1.61	1.23	0.77
24	18	15.2	65.8	131.6	197.4	4385965	2.72	1.70	1.31	0.82
24	19	16.1	62.1	124.2	186.3	4140787	2.88	1.80	1.38	0.86
24	20	16.9	59.2	118.3	177.5	3944773	3.03	1.89	1.45	0.91
24	21	17.8	56.2	112.4	168.5	3745318	3.18	2.00	1.53	0.96
24	22	18.6	53.8	107.5	161.3	3584229	3.33	2.08	1.60	1.00
17	16	19.1	52.4	104.7	157.1	3490401	3.42	2.14	1.64	1.03
17	17	20.3	49.3	98.5	147.8	3284072	3.63	2.27	1.74	1.09
17	18	21.5	46.5	93.0	139.5	3100775	3.85	2.40	1.85	1.15
17	19	22.7	44.1	88.1	132.2	2936858	4.06	2.54	1.95	1.22
17	20	23.9	41.8	83.7	125.5	2789400	4.27	2.67	2.05	1.28
17	21	25.1	39.8	79.7	119.5	2656042	4.50	2.80	2.16	1.34
17	22	26.3	38.0	76.0	114.1	2534854	4.70	2.94	2.26	1.41
13	15	23.4	42.7	85.5	128.2	2849003	4.19	2.62	2.01	1.26
13	17	26.6	37.6	75.2	112.8	2506266	4.75	2.97	2.28	1.43
13	18	28.1	35.6	71.2	106.8	2372479	5.03	3.14	2.41	1.51
13	19	29.7	33.7	67.3	101.0	2244669	5.31	3.32	2.55	1.59
13	20	31.3	31.9	63.9	95.8	2129925	5.59	3.49	2.68	1.68
13	21	32.8	30.5	61.0	91.5	2032520	5.87	3.67	2.82	1.76
13	22	34.4	29.1	58.1	87.2	1937984	6.15	3.84	2.95	1.84
11	15	27.7	36.1	72.2	108.3	2406739	4.96	3.10	2.38	1.49
11	18	33.2	30.1	60.2	90.4	2008032	5.95	3.72	2.86	1.79
11	19	35.1	28.5	57.0	85.5	1899335	6.28	3.92	3.01	1.88
11	20	36.9	27.1	54.2	81.3	1806685	6.61	4.13	3.17	1.98
11	21	38.8	25.8	51.5	77.3	1718213	6.94	4.33	3.33	2.08
11	22	40.6	24.6	49.3	73.9	1642036	7.27	4.54	3.49	2.18

APPLICATION RATES FOR STAR 19T/40T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

1.8 m

12

GEAR	GEAR	120 HOLES SEED SPACING (mm)	1 LINE SEEDS/m	2 LINE SEEDS/m	3 LINE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	21.2	47.2	94.3	141.5	3144654	3.78	2.37	1.81	1.14
24	16	22.6	44.2	88.5	132.7	2949853	4.04	2.52	1.94	1.21
24	17	24.0	41.7	83.3	125.0	2777778	4.29	2.68	2.06	1.29
24	18	25.4	39.4	78.7	118.1	2624672	4.54	2.84	2.18	1.36
24	19	26.8	37.3	74.6	111.9	2487562	4.79	3.00	2.30	1.44
24	20	28.2	35.5	70.9	106.4	2364066	5.05	3.15	2.42	1.51
24	21	29.6	33.8	67.6	101.4	2252252	5.30	3.31	2.54	1.59
24	22	31.0	32.3	64.5	96.8	2150538	5.55	3.47	2.66	1.67
17	16	31.9	31.3	62.7	94.0	2089864	5.70	3.56	2.74	1.71
17	17	33.9	29.5	59.0	88.5	1966568	6.05	3.78	2.90	1.81
17	18	35.8	27.9	55.9	83.8	1862197	6.41	4.00	3.08	1.92
17	19	37.8	26.5	52.9	79.4	1763668	6.77	4.23	3.25	2.03
17	20	39.8	25.1	50.3	75.4	1675042	7.12	4.45	3.42	2.14
17	21	41.8	23.9	47.8	71.8	1594896	7.48	4.67	3.59	2.24
17	22	43.8	22.8	45.7	68.5	1522070	7.84	4.90	3.76	2.35
13	15	39.1	25.6	51.2	76.7	1705030	7.00	4.37	3.36	2.10
13	17	44.3	22.6	45.1	67.7	1504891	7.92	4.95	3.80	2.38
13	18	48.7	20.5	41.1	61.6	1368925	8.38	5.24	4.02	2.52
13	19	49.5	20.2	40.4	60.6	1346801	8.85	5.53	4.25	2.65
13	20	52.1	19.2	38.4	57.6	1279591	9.32	5.82	4.47	2.79
13	21	54.7	18.3	36.6	54.8	1218769	9.78	6.11	4.69	2.93
13	22	57.3	17.5	34.9	52.4	1163467	10.20	6.40	4.90	3.07
11	15	46.2	21.6	43.3	64.9	1443001	8.26	5.16	3.96	2.48
11	18	55.4	18.1	36.1	54.2	1203369	9.91	6.19	4.76	2.97
11	19	58.5	17.1	34.2	51.3	1139601	10.50	6.54	5.04	3.14
11	20	61.6	16.2	32.5	48.7	1082251	11.00	6.99	5.28	3.36
11	21	64.6	15.5	31.0	46.4	1031992	11.50	7.22	5.52	3.47
11	22	67.7	14.8	29.5	44.3	984737	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/40T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK 1.8 m
LINES ON A BED 12

GEAR	GEAR	144 HOLES SEED SPACING (mm)	1 LINE SEEDS/m	2 LINE SEEDS/m	3 LINE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	17.6	56.8	113.6	170.5	3787879	3.78	2.37	1.81	1.14
24	16	18.8	53.2	106.4	159.6	3546099	4.04	2.52	1.94	1.21
24	17	20.0	50.0	100.0	150.0	3333333	4.29	2.68	2.06	1.29
24	18	21.2	47.2	94.3	141.5	3144654	4.54	2.84	2.18	1.36
24	19	22.3	44.8	89.7	134.5	2989537	4.79	3.00	2.30	1.44
24	20	23.5	42.6	85.1	127.7	2836879	5.05	3.15	2.42	1.51
24	21	24.7	40.5	81.0	121.5	2699055	5.30	3.31	2.54	1.59
24	22	25.9	38.6	77.2	115.8	2574003	5.55	3.47	2.66	1.67
17	16	26.6	37.6	75.2	112.8	2506266	5.70	3.56	2.74	1.71
17	17	28.2	35.5	70.9	106.4	2364066	6.05	3.78	2.90	1.81
17	18	29.9	33.4	66.9	100.3	2229654	6.41	4.00	3.08	1.92
17	19	31.5	31.7	63.5	95.2	2116402	6.77	4.23	3.25	2.03
17	20	33.2	30.1	60.2	90.4	2008032	7.12	4.45	3.42	2.14
17	21	34.8	28.7	57.5	86.2	1915709	7.48	4.67	3.59	2.24
17	22	36.5	27.4	54.8	82.2	1826484	7.84	4.90	3.76	2.35
13	15	32.5	30.8	61.5	92.3	2051282	7.00	4.37	3.36	2.10
13	17	36.9	27.1	54.2	81.3	1806685	7.92	4.95	3.80	2.38
13	18	39.1	25.6	51.2	76.7	1705030	8.38	5.24	4.02	2.52
13	19	41.2	24.3	48.5	72.8	1618123	8.85	5.53	4.25	2.65
13	20	43.4	23.0	46.1	69.1	1536098	9.32	5.82	4.47	2.79
13	21	45.6	21.9	43.9	65.8	1461988	9.78	6.11	4.69	2.93
13	22	47.7	21.0	41.9	62.9	1397624	10.20	6.40	4.90	3.07
11	15	38.5	26.0	51.9	77.9	1731602	8.26	5.16	3.96	2.48
11	18	46.2	21.6	43.3	64.9	1443001	9.91	6.19	4.76	2.97
11	19	48.7	20.5	41.1	61.6	1368925	10.50	6.54	5.04	3.14
11	20	51.3	19.5	39.0	58.5	1299545	11.00	6.99	5.28	3.36
11	21	53.9	18.6	37.1	55.7	1236858	11.50	7.22	5.52	3.47
11	22	56.4	17.7	35.5	53.2	1182033	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/24T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

1.8 m
12

GEAR	GEAR	144 HOLES SEED SPACING (mm)	1 LINE SEEDS/m	2 LINE SEEDS/m	3 LINE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	10.6	94.3	188.7	283.0	6289308	2.27	1.42	1.09	0.68
24	16	11.3	88.5	177.0	265.5	5899705	2.42	1.51	1.16	0.72
24	17	12.0	83.3	166.7	250.0	5555556	2.57	1.61	1.23	0.77
24	18	12.7	78.7	157.5	236.2	5249344	2.72	1.70	1.31	0.82
24	19	13.4	74.6	149.3	223.9	4975124	2.88	1.80	1.38	0.86
24	20	14.1	70.9	141.8	212.8	4728132	3.03	1.89	1.45	0.91
24	21	14.8	67.6	135.1	202.7	4504505	3.18	2.00	1.53	0.96
24	22	15.5	64.5	129.0	193.5	4301075	3.33	2.08	1.60	1.00
17	16	15.9	62.9	125.8	188.7	4192872	3.42	2.14	1.64	1.03
17	17	16.9	59.2	118.3	177.5	3944773	3.63	2.27	1.74	1.09
17	18	17.9	55.9	111.7	167.6	3724395	3.85	2.40	1.85	1.15
17	19	18.9	52.9	105.8	158.7	3527337	4.06	2.54	1.95	1.22
17	20	19.9	50.3	100.5	150.8	3350084	4.27	2.67	2.05	1.28
17	21	20.9	47.8	95.7	143.5	3189793	4.50	2.80	2.16	1.34
17	22	21.9	45.7	91.3	137.0	3044140	4.70	2.94	2.26	1.41
13	15	19.5	51.3	102.6	153.8	3418803	4.19	2.62	2.01	1.26
13	17	22.1	45.2	90.5	135.7	3016591	4.75	2.97	2.28	1.43
13	18	23.4	42.7	85.5	128.2	2849003	5.03	3.14	2.41	1.51
13	19	24.7	40.5	81.0	121.5	2699055	5.31	3.32	2.55	1.59
13	20	26.0	38.5	76.9	115.4	2564103	5.59	3.49	2.68	1.68
13	21	27.3	36.6	73.3	109.9	2442002	5.87	3.67	2.82	1.76
13	22	28.6	35.0	69.9	104.9	2331002	6.15	3.84	2.95	1.84
11	15	23.1	43.3	86.6	129.9	2886003	4.96	3.10	2.38	1.49
11	18	27.7	36.1	72.2	108.3	2406739	5.95	3.72	2.86	1.79
11	19	29.2	34.2	68.5	102.7	2283105	6.28	3.92	3.01	1.88
11	20	30.8	32.5	64.9	97.4	2164502	6.61	4.13	3.17	1.98
11	21	32.3	31.0	61.9	92.9	2063983	6.94	4.33	3.33	2.08
11	22	33.9	29.5	59.0	88.5	1966568	7.27	4.54	3.49	2.18

APPLICATION RATES FOR STAR 19T,24T 144/144/108 PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

1.8 m
12

GEAR	GEAR	144/144/108 SEEDS/m	AVERAGE S/M SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
					max kph	max mph	max kph	max mph
24	15	259.4	86.5	5764444	2.27	1.42	1.09	0.68
24	16	243.4	81.1	5408889	2.42	1.51	1.16	0.72
24	17	229.2	76.4	5093333	2.57	1.61	1.23	0.77
24	18	216.5	72.2	4811111	2.72	1.70	1.31	0.82
24	19	205.2	68.4	4560000	2.88	1.80	1.38	0.86
24	20	195.0	65.0	4333333	3.03	1.89	1.45	0.91
24	21	185.8	61.9	4128889	3.18	2.00	1.53	0.96
24	22	177.4	59.1	3942222	3.33	2.08	1.60	1.00
17	16	173.0	57.7	3844444	3.42	2.14	1.64	1.03
17	17	162.7	54.2	3615556	3.63	2.27	1.74	1.09
17	18	153.6	51.2	3413333	3.85	2.40	1.85	1.15
17	19	145.5	48.5	3233333	4.06	2.54	1.95	1.22
17	20	138.2	46.1	3071111	4.27	2.67	2.05	1.28
17	21	131.6	43.9	2924444	4.50	2.80	2.16	1.34
17	22	125.6	41.9	2791111	4.70	2.94	2.26	1.41
13	15	141.0	47.0	3133333	4.19	2.62	2.01	1.26
13	17	124.4	41.5	2764444	4.75	2.97	2.28	1.43
13	18	117.5	39.2	2611111	5.03	3.14	2.41	1.51
13	19	111.3	37.1	2473333	5.31	3.32	2.55	1.59
13	20	105.8	35.3	2351111	5.59	3.49	2.68	1.68
13	21	100.7	33.6	2237778	5.87	3.67	2.82	1.76
13	22	96.2	32.1	2137778	6.15	3.84	2.95	1.84
11	15	119.0	39.7	2644444	4.96	3.10	2.38	1.49
11	18	99.3	33.1	2206667	5.95	3.72	2.86	1.79
11	19	94.2	31.4	2093333	6.28	3.92	3.01	1.88
11	20	89.3	29.8	1984444	6.61	4.13	3.17	1.98
11	21	85.1	28.4	1891111	6.94	4.33	3.33	2.08
11	22	81.1	27.0	1802222	7.27	4.54	3.49	2.18

APPLICATION RATES FOR STAR 19T,40T 144/144/108 PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

1.8 m
12

GEAR	GEAR	144/144/108 SEEDS/m	AVERAGE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
					max kph	max mph	max kph	max mph
24	15	156.3	52.1	3473333	2.27	1.42	1.09	0.68
24	16	146.3	48.8	3251111	2.42	1.51	1.16	0.72
24	17	137.5	45.8	3055556	2.57	1.61	1.23	0.77
24	18	129.7	43.2	2882222	2.72	1.70	1.31	0.82
24	19	123.3	41.1	2740000	2.88	1.80	1.38	0.86
24	20	117.0	39.0	2600000	3.03	1.89	1.45	0.91
24	21	111.3	37.1	2473333	3.18	2.00	1.53	0.96
24	22	106.2	35.4	2360000	3.33	2.08	1.60	1.00
17	16	103.4	34.5	2297778	3.42	2.14	1.64	1.03
17	17	97.5	32.5	2166667	3.63	2.27	1.74	1.09
17	18	92.0	30.7	2044444	3.85	2.40	1.85	1.15
17	19	87.3	29.1	1940000	4.06	2.54	1.95	1.22
17	20	82.8	27.6	1840000	4.27	2.67	2.05	1.28
17	21	79.0	26.3	1755556	4.50	2.80	2.16	1.34
17	22	75.3	25.1	1673333	4.70	2.94	2.26	1.41
13	15	84.6	28.2	1880000	4.19	2.62	2.01	1.26
13	17	74.5	24.8	1655556	4.75	2.97	2.28	1.43
13	18	70.3	23.4	1562222	5.03	3.14	2.41	1.51
13	19	66.7	22.2	1482222	5.31	3.32	2.55	1.59
13	20	63.4	21.1	1408889	5.59	3.49	2.68	1.68
13	21	60.3	20.1	1340000	5.87	3.67	2.82	1.76
13	22	57.7	19.2	1282222	6.15	3.84	2.95	1.84
11	15	71.4	23.8	1586667	4.96	3.10	2.38	1.49
11	18	59.5	19.8	1322222	5.95	3.72	2.86	1.79
11	19	56.5	18.8	1255556	6.28	3.92	3.01	1.88
11	20	53.6	17.9	1191111	6.61	4.13	3.17	1.98
11	21	51.0	17.0	1133333	6.94	4.33	3.33	2.08
11	22	48.8	16.3	1084444	7.27	4.54	3.49	2.18

APPLICATION RATES - WHEEL TRACK 2.0m LINES 12

APPLICATION RATES FOR STAR 19T/24T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

2 m
12

GEAR	GEAR	12 HOLES SEED SPACING (mm)	1 LINE SEEDS/m	2 LINE SEEDS/m	3 LINE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	127	7.9	15.7	23.6	472441	2.27	1.42	1.09	0.68
24	16	135	7.4	14.8	22.2	444444	2.42	1.51	1.16	0.72
24	17	144	6.9	13.9	20.8	416667	2.57	1.61	1.23	0.77
24	18	152	6.6	13.2	19.7	394737	2.72	1.70	1.31	0.82
24	19	161	6.2	12.4	18.6	372671	2.88	1.80	1.38	0.86
24	20	169	5.9	11.8	17.8	355030	3.03	1.89	1.45	0.91
24	21	178	5.6	11.2	16.9	337079	3.18	2.00	1.53	0.96
24	22	186	5.4	10.8	16.1	322581	3.33	2.08	1.60	1.00
17	16	191	5.2	10.5	15.7	314136	3.42	2.14	1.64	1.03
17	17	203	4.9	9.9	14.8	295567	3.63	2.27	1.74	1.09
17	18	215	4.7	9.3	14.0	279070	3.85	2.40	1.85	1.15
17	19	227	4.4	8.8	13.2	264317	4.06	2.54	1.95	1.22
17	20	239	4.2	8.4	12.6	251046	4.27	2.67	2.05	1.28
17	21	251	4.0	8.0	12.0	239044	4.50	2.80	2.16	1.34
17	22	263	3.8	7.6	11.4	228137	4.70	2.94	2.26	1.41
13	15	234	4.3	8.5	12.8	256410	4.19	2.62	2.01	1.26
13	17	266	3.8	7.5	11.3	225564	4.75	2.97	2.28	1.43
13	18	281	3.6	7.1	10.7	213523	5.03	3.14	2.41	1.51
13	19	297	3.4	6.7	10.1	202020	5.31	3.32	2.55	1.59
13	20	313	3.2	6.4	9.6	191693	5.59	3.49	2.68	1.68
13	21	328	3.0	6.1	9.1	182927	5.87	3.67	2.82	1.76
13	22	344	2.9	5.8	8.7	174419	6.15	3.84	2.95	1.84
11	15	277	3.6	7.2	10.8	216606	4.96	3.10	2.38	1.49
11	18	332	3.0	6.0	9.0	180723	5.95	3.72	2.86	1.79
11	19	351	2.8	5.7	8.5	170940	6.28	3.92	3.01	1.88
11	20	369	2.7	5.4	8.1	162602	6.61	4.13	3.17	1.98
11	21	388	2.6	5.2	7.7	154639	6.94	4.33	3.33	2.08
11	22	406	2.5	4.9	7.4	147783	7.27	4.54	3.49	2.18

APPLICATION RATES FOR STAR 19T/40T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

2 m
12

GEAR	GEAR	12 HOLES SEED SPACING (mm)	1 LINE SEEDS/m	2 LINE SEEDS/m	3 LINE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	212	4.7	9.4	14.2	283019	3.78	2.37	1.81	1.14
24	16	226	4.4	8.8	13.3	265487	4.04	2.52	1.94	1.21
24	17	240	4.2	8.3	12.5	250000	4.29	2.68	2.06	1.29
24	18	254	3.9	7.9	11.8	236220	4.54	2.84	2.18	1.36
24	19	268	3.7	7.5	11.2	223881	4.79	3.00	2.30	1.44
24	20	282	3.5	7.1	10.6	212766	5.05	3.15	2.42	1.51
24	21	296	3.4	6.8	10.1	202703	5.30	3.31	2.54	1.59
24	22	310	3.2	6.5	9.7	193548	5.55	3.47	2.66	1.67
17	16	319	3.1	6.3	9.4	188088	5.70	3.56	2.74	1.71
17	17	339	2.9	5.9	8.8	176991	6.05	3.78	2.90	1.81
17	18	358	2.8	5.6	8.4	167598	6.41	4.00	3.08	1.92
17	19	378	2.6	5.3	7.9	158730	6.77	4.23	3.25	2.03
17	20	398	2.5	5.0	7.5	150754	7.12	4.45	3.42	2.14
17	21	418	2.4	4.8	7.2	143541	7.48	4.67	3.59	2.24
17	22	438	2.3	4.6	6.8	136986	7.84	4.90	3.76	2.35
13	15	390	2.6	5.1	7.7	153846	7.00	4.37	3.36	2.10
13	17	443	2.3	4.5	6.8	135440	7.92	4.95	3.80	2.38
13	18	469	2.1	4.3	6.4	127932	8.38	5.24	4.02	2.52
13	19	495	2.0	4.0	6.1	121212	8.85	5.53	4.25	2.65
13	20	521	1.9	3.8	5.8	115163	9.32	5.82	4.47	2.79
13	21	547	1.8	3.7	5.5	109689	9.78	6.11	4.69	2.93
13	22	573	1.7	3.5	5.2	104712	10.20	6.40	4.90	3.07
11	15	462	2.2	4.3	6.5	129870	8.26	5.16	3.96	2.48
11	18	554	1.8	3.6	5.4	108303	9.91	6.19	4.76	2.97
11	19	585	1.7	3.4	5.1	102564	10.50	6.54	5.04	3.14
11	20	616	1.6	3.2	4.9	97403	11.00	6.99	5.28	3.36
11	21	664	2.2	4.3	6.5	129310	11.50	7.22	5.52	3.47
11	22	678	1.5	2.9	4.4	88496	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/24T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK 2 m
LINES ON A BED 12

GEAR	GEAR	24 HOLES SEED SPACING (mm)	1 LINE SEEDS/m	2 LINE SEEDS/m	3 LINE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	63.5	15.7	31.5	47.2	944882	2.27	1.42	1.09	0.68
24	16	67.7	14.8	29.5	44.3	886263	2.42	1.51	1.16	0.72
24	17	71.9	13.9	27.8	41.7	834492	2.57	1.61	1.23	0.77
24	18	76.2	13.1	26.2	39.4	787402	2.72	1.70	1.31	0.82
24	19	80.4	12.4	24.9	37.3	746269	2.88	1.80	1.38	0.86
24	20	84.6	11.8	23.6	35.5	709220	3.03	1.89	1.45	0.91
24	21	88.9	11.2	22.5	33.7	674916	3.18	2.00	1.53	0.96
24	22	93.1	10.7	21.5	32.2	644468	3.33	2.08	1.60	1.00
17	16	95.6	10.5	20.9	31.4	627615	3.42	2.14	1.64	1.03
17	17	102.0	9.8	19.6	29.4	588235	3.63	2.27	1.74	1.09
17	18	108.0	9.3	18.5	27.8	555566	3.85	2.40	1.85	1.15
17	19	114.0	8.8	17.5	26.3	526316	4.06	2.54	1.95	1.22
17	20	120.0	8.3	16.7	25.0	500000	4.27	2.67	2.05	1.28
17	21	125.0	8.0	16.0	24.0	480000	4.50	2.80	2.16	1.34
17	22	131.0	7.6	15.3	22.9	458015	4.70	2.94	2.26	1.41
13	15	117.0	8.5	17.1	25.6	512821	4.19	2.62	2.01	1.26
13	17	133.0	7.5	15.0	22.6	451128	4.75	2.97	2.28	1.43
13	18	141.0	7.1	14.2	21.3	425532	5.03	3.14	2.41	1.51
13	19	148.0	6.8	13.5	20.3	405405	5.31	3.32	2.55	1.59
13	20	156.0	6.4	12.8	19.2	384615	5.59	3.49	2.68	1.68
13	21	164.0	6.1	12.2	18.3	365854	5.87	3.67	2.82	1.76
13	22	172.0	5.8	11.6	17.4	348837	6.15	3.84	2.95	1.84
11	15	138.0	7.2	14.5	21.7	434783	4.96	3.10	2.38	1.49
11	18	166.0	6.0	12.0	18.1	361446	5.95	3.72	2.86	1.79
11	19	175.0	5.7	11.4	17.1	342857	6.28	3.92	3.01	1.88
11	20	185.0	5.4	10.8	16.2	324324	6.61	4.13	3.17	1.98
11	21	194.0	5.2	10.3	15.5	309278	6.94	4.33	3.33	2.08
11	22	203.0	4.9	9.9	14.8	295567	7.27	4.54	3.49	2.18

APPLICATION RATES FOR STAR 19T/40T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

2 m
12

GEAR	GEAR	24 HOLES SEED SPACING (mm)	1 LINE SEEDS/m	2 LINE SEEDS/m	3 LINE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	106	9.4	18.9	28.3	566038	3.78	2.37	1.81	1.14
24	16	113	8.8	17.7	26.5	530973	4.04	2.52	1.94	1.21
24	17	120	8.3	16.7	25.0	500000	4.29	2.68	2.06	1.29
24	18	127	7.9	15.7	23.6	472441	4.54	2.84	2.18	1.36
24	19	134	7.5	14.9	22.4	447761	4.79	3.00	2.30	1.44
24	20	141	7.1	14.2	21.3	425532	5.05	3.15	2.42	1.51
24	21	148	6.8	13.5	20.3	405405	5.30	3.31	2.54	1.59
24	22	155	6.5	12.9	19.4	387097	5.55	3.47	2.66	1.67
17	16	159	6.3	12.6	18.9	377358	5.70	3.56	2.74	1.71
17	17	169	5.9	11.8	17.8	355030	6.05	3.78	2.90	1.81
17	18	179	5.6	11.2	16.8	335196	6.41	4.00	3.08	1.92
17	19	189	5.3	10.6	15.9	317460	6.77	4.23	3.25	2.03
17	20	199	5.0	10.1	15.1	301508	7.12	4.45	3.42	2.14
17	21	209	4.8	9.6	14.4	287081	7.48	4.67	3.59	2.24
17	22	219	4.6	9.1	13.7	273973	7.84	4.90	3.76	2.35
13	15	195	5.1	10.3	15.4	307692	7.00	4.37	3.36	2.10
13	17	221	4.5	9.0	13.6	271493	7.92	4.95	3.80	2.38
13	18	234	4.3	8.5	12.8	256410	8.38	5.24	4.02	2.52
13	19	247	4.0	8.1	12.1	242915	8.85	5.53	4.25	2.65
13	20	260	3.8	7.7	11.5	230769	9.32	5.82	4.47	2.79
13	21	273	3.7	7.3	11.0	219780	9.78	6.11	4.69	2.93
13	22	286	3.5	7.0	10.5	209790	10.20	6.40	4.90	3.07
11	15	231	4.3	8.7	13.0	259740	8.26	5.16	3.96	2.48
11	18	277	3.6	7.2	10.8	216606	9.91	6.19	4.76	2.97
11	19	292	3.4	6.8	10.3	205479	10.50	6.54	5.04	3.14
11	20	308	3.2	6.5	9.7	194805	11.00	6.99	5.28	3.36
11	21	323	3.1	6.2	9.3	185759	11.50	7.22	5.52	3.47
11	22	339	2.9	5.9	8.8	176991	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/24T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

2 m
12

GEAR	GEAR	48 HOLES SEED SPACING (mm)	1 LINE SEEDS/m	2 LINE SEEDS/m	3 LINE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	31.7	31.5	63.1	94.6	1892744	2.27	1.42	1.09	0.68
24	16	33.9	29.5	59.0	88.5	1769912	2.42	1.51	1.16	0.72
24	17	36.0	27.8	55.6	83.3	1666667	2.57	1.61	1.23	0.77
24	18	38.1	26.2	52.5	78.7	1574803	2.72	1.70	1.31	0.82
24	19	40.2	24.9	49.8	74.6	1492537	2.88	1.80	1.38	0.86
24	20	42.3	23.6	47.3	70.9	1418440	3.03	1.89	1.45	0.91
24	21	44.4	22.5	45.0	67.6	1351351	3.18	2.00	1.53	0.96
24	22	46.5	21.5	43.0	64.5	1290323	3.33	2.08	1.60	1.00
17	16	47.8	20.9	41.8	62.8	1255230	3.42	2.14	1.64	1.03
17	17	50.8	19.7	39.4	59.1	1181102	3.63	2.27	1.74	1.09
17	18	53.8	18.6	37.2	55.8	1115242	3.85	2.40	1.85	1.15
17	19	56.8	17.6	35.2	52.8	1056338	4.06	2.54	1.95	1.22
17	20	59.7	16.8	33.5	50.3	1005025	4.27	2.67	2.05	1.28
17	21	62.7	15.9	31.9	47.8	956938	4.50	2.80	2.16	1.34
17	22	65.7	15.2	30.4	45.7	913242	4.70	2.94	2.26	1.41
13	15	58.6	17.1	34.1	51.2	1023891	4.19	2.62	2.01	1.26
13	17	66.4	15.1	30.1	45.2	903614	4.75	2.97	2.28	1.43
13	18	70.3	14.2	28.4	42.7	853485	5.03	3.14	2.41	1.51
13	19	74.2	13.5	27.0	40.4	808625	5.31	3.32	2.55	1.59
13	20	78.1	12.8	25.6	38.4	768246	5.59	3.49	2.68	1.68
13	21	82.0	12.2	24.4	36.6	731707	5.87	3.67	2.82	1.76
13	22	85.9	11.6	23.3	34.9	698487	6.15	3.84	2.95	1.84
11	15	69.2	14.5	28.9	43.4	867052	4.96	3.10	2.38	1.49
11	18	83.1	12.0	24.1	36.1	722022	5.95	3.72	2.86	1.79
11	19	87.7	11.4	22.8	34.2	684151	6.28	3.92	3.01	1.88
11	20	92.3	10.8	21.7	32.5	650054	6.61	4.13	3.17	1.98
11	21	96.9	10.3	20.6	31.0	619195	6.94	4.33	3.33	2.08
11	22	102.0	9.8	19.6	29.4	588235	7.27	4.54	3.49	2.18

APPLICATION RATES FOR STAR 19T/40T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK 2 m
 LINES ON A BED 12

GEAR	GEAR	48 HOLES SEED SPACING (mm)	1 LINE SEEDS/m	2 LINE SEEDS/m	3 LINE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	52.9	18.9	37.8	56.7	1134216	3.78	2.37	1.81	1.14
24	16	56.4	17.7	35.5	53.2	1063830	4.04	2.52	1.94	1.21
24	17	60.0	16.7	33.3	50.0	1000000	4.29	2.68	2.06	1.29
24	18	63.5	15.7	31.5	47.2	944882	4.54	2.84	2.18	1.36
24	19	67.0	14.9	29.9	44.8	895522	4.79	3.00	2.30	1.44
24	20	70.5	14.2	28.4	42.6	851064	5.05	3.15	2.42	1.51
24	21	74.1	13.5	27.0	40.5	809717	5.30	3.31	2.54	1.59
24	22	77.6	12.9	25.8	38.7	773196	5.55	3.47	2.66	1.67
17	16	79.7	12.5	25.1	37.6	752823	5.70	3.56	2.74	1.71
17	17	84.6	11.8	23.6	35.5	709220	6.05	3.78	2.90	1.81
17	18	89.6	11.2	22.3	33.5	669643	6.41	4.00	3.08	1.92
17	19	94.6	10.6	21.1	31.7	634249	6.77	4.23	3.25	2.03
17	20	99.6	10.0	20.1	30.1	602410	7.12	4.45	3.42	2.14
17	21	105.0	9.5	19.0	28.6	571429	7.48	4.67	3.59	2.24
17	22	110.0	9.1	18.2	27.3	545455	7.84	4.90	3.76	2.35
13	15	97.7	10.2	20.5	30.7	614125	7.00	4.37	3.36	2.10
13	17	111.0	9.0	18.0	27.0	540541	7.92	4.95	3.80	2.38
13	18	117.0	8.5	17.1	25.6	512821	8.38	5.24	4.02	2.52
13	19	124.0	8.1	16.1	24.2	483871	8.85	5.53	4.25	2.65
13	20	130.0	7.7	15.4	23.1	461538	9.32	5.82	4.47	2.79
13	21	137.0	7.3	14.6	21.9	437956	9.78	6.11	4.69	2.93
13	22	143.0	7.0	14.0	21.0	419580	10.20	6.40	4.90	3.07
11	15	115.0	8.7	17.4	26.1	521739	8.26	5.16	3.96	2.48
11	18	138.0	7.2	14.5	21.7	434783	9.91	6.19	4.76	2.97
11	19	146.0	6.8	13.7	20.5	410959	10.50	6.54	5.04	3.14
11	20	154.0	6.5	13.0	19.5	389610	11.00	6.99	5.28	3.36
11	21	162.0	6.2	12.3	18.5	370370	11.50	7.22	5.52	3.47
11	22	169.0	5.9	11.8	17.8	355030	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/24T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK 2 m
LINES ON A BED 12

GEAR	GEAR	72 HOLES SEED SPACING (mm)	1 LINE SEEDS/m	2 LINE SEEDS/m	3 LINE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	21.2	47.2	94.3	141.5	2830189	2.27	1.42	1.09	0.68
24	16	22.6	44.2	88.5	132.7	2654867	2.42	1.51	1.16	0.72
24	17	24.0	41.7	83.3	125.0	2500000	2.57	1.61	1.23	0.77
24	18	25.4	39.4	78.7	118.1	2362205	2.72	1.70	1.31	0.82
24	19	26.8	37.3	74.6	111.9	2238806	2.88	1.80	1.38	0.86
24	20	28.2	35.5	70.9	106.4	2127660	3.03	1.89	1.45	0.91
24	21	29.6	33.8	67.6	101.4	2027027	3.18	2.00	1.53	0.96
24	22	31.0	32.3	64.5	96.8	1935484	3.33	2.08	1.60	1.00
17	16	31.9	31.3	62.7	94.0	1880878	3.42	2.14	1.64	1.03
17	17	33.9	29.5	59.0	88.5	1769912	3.63	2.27	1.74	1.09
17	18	35.8	27.9	55.9	83.8	1675978	3.85	2.40	1.85	1.15
17	19	37.8	26.5	52.9	79.4	1587302	4.06	2.54	1.95	1.22
17	20	39.8	25.1	50.3	75.4	1507538	4.27	2.67	2.05	1.28
17	21	41.8	23.9	47.8	71.8	1435407	4.50	2.80	2.16	1.34
17	22	43.8	22.8	45.7	68.5	1369863	4.70	2.94	2.26	1.41
13	15	39.1	25.6	51.2	76.7	1534527	4.19	2.62	2.01	1.26
13	17	44.3	22.6	45.1	67.7	1354402	4.75	2.97	2.28	1.43
13	18	46.9	21.3	42.6	64.0	1279318	5.03	3.14	2.41	1.51
13	19	49.5	20.2	40.4	60.6	1212121	5.31	3.32	2.55	1.59
13	20	52.1	19.2	38.4	57.6	1151631	5.59	3.49	2.68	1.68
13	21	54.7	18.3	36.6	54.8	1096892	5.87	3.67	2.82	1.76
13	22	57.3	17.5	34.9	52.4	1047120	6.15	3.84	2.95	1.84
11	15	46.2	21.6	43.3	64.9	1298701	4.96	3.10	2.38	1.49
11	18	55.4	18.1	36.1	54.2	1083032	5.95	3.72	2.86	1.79
11	19	58.5	17.1	34.2	51.3	1025641	6.28	3.92	3.01	1.88
11	20	61.5	16.3	32.5	48.8	975610	6.61	4.13	3.17	1.98
11	21	64.6	15.5	31.0	46.4	928793	6.94	4.33	3.33	2.08
11	22	67.7	14.8	29.5	44.3	886263	7.27	4.54	3.49	2.18

APPLICATION RATES FOR STAR 19T/40T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK 2 m
 LINES ON A BED 12

GEAR	GEAR	72 HOLES SEED SPACING (mm)	1 LINE SEEDS/m	2 LINE SEEDS/m	3 LINE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	35.3	28.3	56.7	85.0	1699717	3.78	2.37	1.81	1.14
24	16	37.6	26.6	53.2	79.8	1595745	4.04	2.52	1.94	1.21
24	17	40.0	25.0	50.0	75.0	1500000	4.29	2.68	2.06	1.29
24	18	42.3	23.6	47.3	70.9	1418440	4.54	2.84	2.18	1.36
24	19	44.7	22.4	44.7	67.1	1342282	4.79	3.00	2.30	1.44
24	20	47.0	21.3	42.6	63.8	1276596	5.05	3.15	2.42	1.51
24	21	49.4	20.2	40.5	60.7	1214575	5.30	3.31	2.54	1.59
24	22	51.7	19.3	38.7	58.0	1160542	5.55	3.47	2.66	1.67
17	16	53.1	18.8	37.7	56.5	1129944	5.70	3.56	2.74	1.71
17	17	56.4	17.7	35.5	53.2	1063830	6.05	3.78	2.90	1.81
17	18	59.7	16.8	33.5	50.3	1005025	6.41	4.00	3.08	1.92
17	19	63.1	15.8	31.7	47.5	950872	6.77	4.23	3.25	2.03
17	20	66.4	15.1	30.1	45.2	903614	7.12	4.45	3.42	2.14
17	21	69.7	14.3	28.7	43.0	860832	7.48	4.67	3.59	2.24
17	22	73.0	13.7	27.4	41.1	821918	7.84	4.90	3.76	2.35
13	15	65.1	15.4	30.7	46.1	921659	7.00	4.37	3.36	2.10
13	17	73.8	13.6	27.1	40.7	813008	7.92	4.95	3.80	2.38
13	18	78.1	12.8	25.6	38.4	768246	8.38	5.24	4.02	2.52
13	19	82.5	12.1	24.2	36.4	727273	8.85	5.53	4.25	2.65
13	20	86.8	11.5	23.0	34.6	691244	9.32	5.82	4.47	2.79
13	21	91.1	11.0	22.0	32.9	658617	9.78	6.11	4.69	2.93
13	22	95.5	10.5	20.9	31.4	628272	10.20	6.40	4.90	3.07
11	15	76.9	13.0	26.0	39.0	780234	8.26	5.16	3.96	2.48
11	18	92.3	10.8	21.7	32.5	650054	9.91	6.19	4.76	2.97
11	19	97.5	10.3	20.5	30.8	615385	10.50	6.54	5.04	3.14
11	20	103	9.7	19.4	29.1	582524	11.00	6.99	5.28	3.36
11	21	108	9.3	18.5	27.8	555556	11.50	7.22	5.52	3.47
11	22	113	8.8	17.7	26.5	530973	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/24T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK 2 m
 LINES ON A BED 12

GEAR	GEAR	96 HOLES SEED SPACING (mm)	1 LINE SEEDS/m	2 LINE SEEDS/m	3 LINE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	15.9	62.9	125.8	188.7	3773585	2.27	1.42	1.09	0.68
24	16	16.9	59.2	118.3	177.5	3550296	2.42	1.51	1.16	0.72
24	17	18.0	55.6	111.1	166.7	3333333	2.57	1.61	1.23	0.77
24	18	19.0	52.6	105.3	157.9	3157895	2.72	1.70	1.31	0.82
24	19	20.1	49.8	99.5	149.3	2985075	2.88	1.80	1.38	0.86
24	20	21.2	47.2	94.3	141.5	2830189	3.03	1.89	1.45	0.91
24	21	22.2	45.0	90.1	135.1	2702703	3.18	2.00	1.53	0.96
24	22	23.3	42.9	85.8	128.8	2575107	3.33	2.08	1.60	1.00
17	16	23.9	41.8	83.7	125.5	2510460	3.42	2.14	1.64	1.03
17	17	25.4	39.4	78.7	118.1	2362205	3.63	2.27	1.74	1.09
17	18	26.9	37.2	74.3	111.5	2230483	3.85	2.40	1.85	1.15
17	19	28.4	35.2	70.4	105.6	2112676	4.06	2.54	1.95	1.22
17	20	29.9	33.4	66.9	100.3	2006689	4.27	2.67	2.05	1.28
17	21	31.4	31.8	63.7	95.5	1910828	4.50	2.80	2.16	1.34
17	22	32.9	30.4	60.8	91.2	1823708	4.70	2.94	2.26	1.41
13	15	29.3	34.1	68.3	102.4	2047782	4.19	2.62	2.01	1.26
13	17	33.2	30.1	60.2	90.4	1807229	4.75	2.97	2.28	1.43
13	18	35.2	28.4	56.8	85.2	1704545	5.03	3.14	2.41	1.51
13	19	37.1	27.0	53.9	80.9	1617251	5.31	3.32	2.55	1.59
13	20	39.1	25.6	51.2	76.7	1534527	5.59	3.49	2.68	1.68
13	21	41.0	24.4	48.8	73.2	1463415	5.87	3.67	2.82	1.76
13	22	43.0	23.3	46.5	69.8	1395349	6.15	3.84	2.95	1.84
11	15	34.6	28.9	57.8	86.7	1734104	4.96	3.10	2.38	1.49
11	18	41.5	24.1	48.2	72.3	1445783	5.95	3.72	2.86	1.79
11	19	43.9	22.8	45.6	68.3	1366743	6.28	3.92	3.01	1.88
11	20	46.2	21.6	43.3	64.9	1298701	6.61	4.13	3.17	1.98
11	21	48.5	20.6	41.2	61.9	1237113	6.94	4.33	3.33	2.08
11	22	50.8	19.7	39.4	59.1	1181102	7.27	4.54	3.49	2.18

APPLICATION RATES FOR STAR 19T/40T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK : 2 m
 LINES ON A BED 12

GEAR	GEAR	96 HOLES SEED SPACING (mm)	1 LINE SEEDS/m	2 LINE SEEDS/m	3 LINE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	26.4	37.9	75.8	113.6	2272727	3.78	2.37	1.81	1.14
24	16	28.2	35.5	70.9	106.4	2127660	4.04	2.52	1.94	1.21
24	17	30.0	33.3	66.7	100.0	2000000	4.29	2.68	2.06	1.29
24	18	31.7	31.5	63.1	94.6	1892744	4.54	2.84	2.18	1.36
24	19	33.5	29.9	59.7	89.6	1791045	4.79	3.00	2.30	1.44
24	20	35.3	28.3	56.7	85.0	1699717	5.05	3.15	2.42	1.51
24	21	37.0	27.0	54.1	81.1	1621622	5.30	3.31	2.54	1.59
24	22	38.8	25.8	51.5	77.3	1546392	5.55	3.47	2.66	1.67
17	16	39.8	25.1	50.3	75.4	1507538	5.70	3.56	2.74	1.71
17	17	42.3	23.6	47.3	70.9	1418440	6.05	3.78	2.90	1.81
17	18	44.8	22.3	44.6	67.0	1339286	6.41	4.00	3.08	1.92
17	19	47.3	21.1	42.3	63.4	1268499	6.77	4.23	3.25	2.03
17	20	49.8	20.1	40.2	60.2	1204819	7.12	4.45	3.42	2.14
17	21	52.3	19.1	38.2	57.4	1147228	7.48	4.67	3.59	2.24
17	22	54.8	18.2	36.5	54.7	1094891	7.84	4.90	3.76	2.35
13	15	48.8	20.5	41.0	61.5	1229508	7.00	4.37	3.36	2.10
13	17	55.3	18.1	36.2	54.2	1084991	7.92	4.95	3.80	2.38
13	18	58.6	17.1	34.1	51.2	1023891	8.38	5.24	4.02	2.52
13	19	61.8	16.2	32.4	48.5	970874	8.85	5.53	4.25	2.65
13	20	65.1	15.4	30.7	46.1	921659	9.32	5.82	4.47	2.79
13	21	68.4	14.6	29.2	43.9	877193	9.78	6.11	4.69	2.93
13	22	71.6	14.0	27.9	41.9	837989	10.20	6.40	4.90	3.07
11	15	57.7	17.3	34.7	52.0	1039861	8.26	5.16	3.96	2.48
11	18	69.2	14.5	28.9	43.4	867052	9.91	6.19	4.76	2.97
11	19	73.1	13.7	27.4	41.0	820793	10.50	6.54	5.04	3.14
11	20	76.9	13.0	26.0	39.0	780234	11.00	6.99	5.28	3.36
11	21	80.8	12.4	24.8	37.1	742574	11.50	7.22	5.52	3.47
11	22	84.6	11.8	23.6	35.5	709220	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/24T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

2 m
12

GEAR	GEAR	120 HOLES SEED SPACING (mm)	1 LINE SEEDS/m	2 LINE SEEDS/m	3 LINE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	12.7	78.7	157.5	236.2	4724409	2.27	1.42	1.09	0.68
24	16	13.5	74.1	148.1	222.2	4444444	2.42	1.51	1.16	0.72
24	17	14.4	69.4	138.9	208.3	4166667	2.57	1.61	1.23	0.77
24	18	15.2	65.8	131.6	197.4	3947368	2.72	1.70	1.31	0.82
24	19	16.1	62.1	124.2	186.3	3726708	2.88	1.80	1.38	0.86
24	20	16.9	59.2	118.3	177.5	3550296	3.03	1.89	1.45	0.91
24	21	17.8	56.2	112.4	168.5	3370787	3.18	2.00	1.53	0.96
24	22	18.6	53.8	107.5	161.3	3225806	3.33	2.08	1.60	1.00
17	16	19.1	52.4	104.7	157.1	3141361	3.42	2.14	1.64	1.03
17	17	20.3	49.3	98.5	147.8	2955665	3.63	2.27	1.74	1.09
17	18	21.5	46.5	93.0	139.5	2790698	3.85	2.40	1.85	1.15
17	19	22.7	44.1	88.1	132.2	2643172	4.06	2.54	1.95	1.22
17	20	23.9	41.8	83.7	125.5	2510460	4.27	2.67	2.05	1.28
17	21	25.1	39.8	79.7	119.5	2390438	4.50	2.80	2.16	1.34
17	22	26.3	38.0	76.0	114.1	2281369	4.70	2.94	2.26	1.41
13	15	23.4	42.7	85.5	128.2	2564103	4.19	2.62	2.01	1.26
13	17	26.6	37.6	75.2	112.8	2255639	4.75	2.97	2.28	1.43
13	18	28.1	35.6	71.2	106.8	2135231	5.03	3.14	2.41	1.51
13	19	29.7	33.7	67.3	101.0	2020202	5.31	3.32	2.55	1.59
13	20	31.3	31.9	63.9	95.8	1916933	5.59	3.49	2.68	1.68
13	21	32.8	30.5	61.0	91.5	1829268	5.87	3.67	2.82	1.76
13	22	34.4	29.1	58.1	87.2	1744186	6.15	3.84	2.95	1.84
11	15	27.7	36.1	72.2	108.3	2166065	4.96	3.10	2.38	1.49
11	18	33.2	30.1	60.2	90.4	1807229	5.95	3.72	2.86	1.79
11	19	35.1	28.5	57.0	85.5	1709402	6.28	3.92	3.01	1.88
11	20	36.9	27.1	54.2	81.3	1626016	6.61	4.13	3.17	1.98
11	21	38.8	25.8	51.5	77.3	1546392	6.94	4.33	3.33	2.08
11	22	40.6	24.6	49.3	73.9	1477833	7.27	4.54	3.49	2.18

APPLICATION RATES FOR STAR 19T/40T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK

2 m

12

LINES ON A BED

GEAR	GEAR	120 HOLES SEED SPACING (mm)	1 LINE SEEDS/m	2 LINE SEEDS/m	3 LINE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	21.2	47.2	94.3	141.5	2830189	3.78	2.37	1.81	1.14
24	16	22.6	44.2	88.5	132.7	2654867	4.04	2.52	1.94	1.21
24	17	24.0	41.7	83.3	125.0	2500000	4.29	2.68	2.06	1.29
24	18	25.4	39.4	78.7	118.1	2362205	4.54	2.84	2.18	1.36
24	19	26.8	37.3	74.6	111.9	2238806	4.79	3.00	2.30	1.44
24	20	28.2	35.5	70.9	106.4	2127660	5.05	3.15	2.42	1.51
24	21	29.6	33.8	67.6	101.4	2027027	5.30	3.31	2.54	1.59
24	22	31.0	32.3	64.5	96.8	1936484	5.55	3.47	2.66	1.67
17	16	31.9	31.3	62.7	94.0	1880878	5.70	3.56	2.74	1.71
17	17	33.9	29.5	59.0	88.5	1769912	6.05	3.78	2.90	1.81
17	18	35.8	27.9	55.9	83.8	1675978	6.41	4.00	3.08	1.92
17	19	37.8	26.5	52.9	79.4	1587302	6.77	4.23	3.25	2.03
17	20	39.8	25.1	50.3	75.4	1507538	7.12	4.45	3.42	2.14
17	21	41.8	23.9	47.8	71.8	1435407	7.48	4.67	3.59	2.24
17	22	43.8	22.8	45.7	68.5	1369863	7.84	4.90	3.76	2.35
13	15	39.1	25.0	51.2	76.7	1534527	7.00	4.37	3.36	2.10
13	17	44.3	22.6	45.1	67.7	1354402	7.92	4.95	3.80	2.38
13	18	48.7	20.5	41.1	61.6	1232033	8.38	5.24	4.02	2.52
13	19	49.5	20.2	40.4	60.6	1212121	8.85	5.53	4.25	2.65
13	20	52.1	19.2	38.4	57.6	1151631	9.32	5.82	4.47	2.79
13	21	54.7	18.3	36.6	54.8	1096892	9.78	6.11	4.69	2.93
13	22	57.3	17.5	34.9	52.4	1047120	10.20	6.40	4.90	3.07
11	15	46.2	21.6	43.3	64.9	1298701	8.26	5.16	3.96	2.48
11	18	55.4	18.1	36.1	54.2	1083032	9.91	6.19	4.76	2.97
11	19	58.5	17.1	34.2	51.3	1025641	10.50	6.54	5.04	3.14
11	20	61.6	16.2	32.5	48.7	974026	11.00	6.99	5.28	3.36
11	21	64.6	15.5	31.0	46.4	928793	11.50	7.22	5.52	3.47
11	22	67.7	14.8	29.5	44.3	886263	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/24T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK 2 m
LINES ON A BED 12

GEAR	GEAR	144 HOLES SEED SPACING (mm)	1' LINE SEEDS/m	2 LINE SEEDS/m	3 LINE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	10.6	94.3	188.7	283.0	5660377	2.27	1.42	1.09	0.68
24	16	11.3	88.5	177.0	265.5	5309735	2.42	1.51	1.16	0.72
24	17	12.0	83.3	166.7	250.0	5000000	2.57	1.61	1.23	0.77
24	18	12.7	78.7	157.5	236.2	4724409	2.72	1.70	1.31	0.82
24	19	13.4	74.6	149.3	223.9	4477612	2.88	1.80	1.38	0.86
24	20	14.1	70.9	141.8	212.8	4255319	3.03	1.89	1.45	0.91
24	21	14.8	67.6	135.1	202.7	4054054	3.18	2.00	1.53	0.96
24	22	15.5	64.5	129.0	193.5	3870968	3.33	2.08	1.60	1.00
17	16	15.9	62.9	125.8	188.7	3773585	3.42	2.14	1.64	1.03
17	17	16.9	59.2	118.3	177.5	3550296	3.63	2.27	1.74	1.09
17	18	17.9	55.9	111.7	167.6	3351955	3.85	2.40	1.85	1.15
17	19	18.9	52.9	105.8	158.7	3174603	4.06	2.54	1.95	1.22
17	20	19.9	50.3	100.5	150.8	3015075	4.27	2.67	2.05	1.28
17	21	20.9	47.8	95.7	143.5	2870813	4.50	2.80	2.16	1.34
17	22	21.9	45.7	91.3	137.0	2739726	4.70	2.94	2.26	1.41
13	15	19.5	51.3	102.6	153.8	3076923	4.19	2.62	2.01	1.26
13	17	22.1	45.2	90.5	135.7	2714932	4.75	2.97	2.28	1.43
13	18	23.4	42.7	85.5	128.2	2564103	5.03	3.14	2.41	1.51
13	19	24.7	40.5	81.0	121.5	2429150	5.31	3.32	2.55	1.59
13	20	26.0	38.5	76.9	115.4	2307692	5.59	3.49	2.68	1.68
13	21	27.3	36.6	73.3	109.9	2197802	5.87	3.67	2.82	1.76
13	22	28.6	35.0	69.9	104.9	2097902	6.15	3.84	2.95	1.84
11	15	23.1	43.3	86.6	129.9	2597403	4.96	3.10	2.38	1.49
11	18	27.7	36.1	72.2	108.3	2166065	5.95	3.72	2.86	1.79
11	19	29.2	34.2	68.5	102.7	2054795	6.28	3.92	3.01	1.88
11	20	30.8	32.5	64.9	97.4	1948052	6.61	4.13	3.17	1.98
11	21	32.3	31.0	61.9	92.9	1857585	6.94	4.33	3.33	2.08
11	22	33.9	29.5	59.0	88.5	1769912	7.27	4.54	3.49	2.18

APPLICATION RATES FOR STAR 19T/40T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK 2 m
LINES ON A BED 12

GEAR	GEAR	144 HOLES SEED SPACING (mm)	1 LINE SEEDS/m	2 LINE SEEDS/m	3 LINE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	17.6	56.8	113.6	170.5	3409091	3.78	2.37	1.81	1.14
24	16	18.8	53.2	106.4	159.6	3191489	4.04	2.52	1.94	1.21
24	17	20.0	50.0	100.0	150.0	3000000	4.29	2.68	2.06	1.29
24	18	21.2	47.2	94.3	141.5	2830189	4.54	2.84	2.18	1.36
24	19	22.3	44.8	89.7	134.5	2690583	4.79	3.00	2.30	1.44
24	20	23.5	42.6	85.1	127.7	2553191	5.05	3.15	2.42	1.51
24	21	24.7	40.5	81.0	121.5	2429150	5.30	3.31	2.54	1.59
24	22	25.9	38.6	77.2	115.8	2316602	5.55	3.47	2.66	1.67
17	16	26.6	37.6	75.2	112.8	2255639	5.70	3.56	2.74	1.71
17	17	28.2	35.5	70.9	106.4	2127660	6.05	3.78	2.90	1.81
17	18	29.9	33.4	66.9	100.3	2006689	6.41	4.00	3.08	1.92
17	19	31.5	31.7	63.5	95.2	1904762	6.77	4.23	3.25	2.03
17	20	33.2	30.1	60.2	90.4	1807229	7.12	4.45	3.42	2.14
17	21	34.8	28.7	57.5	86.2	1724138	7.48	4.67	3.59	2.24
17	22	36.5	27.4	54.8	82.2	1643836	7.84	4.90	3.76	2.35
13	15	32.5	30.8	61.5	92.3	1846154	7.00	4.37	3.36	2.10
13	17	36.9	27.1	54.2	81.3	1626016	7.92	4.95	3.80	2.38
13	18	39.1	25.6	51.2	76.7	1534527	8.38	5.24	4.02	2.52
13	19	41.2	24.3	48.5	72.8	1456311	8.85	5.53	4.25	2.65
13	20	43.4	23.0	46.1	69.1	1382488	9.32	5.82	4.47	2.79
13	21	45.6	21.9	43.9	65.8	1315789	9.78	6.11	4.69	2.93
13	22	47.7	21.0	41.9	62.9	1257862	10.20	6.40	4.90	3.07
11	15	38.5	26.0	51.9	77.9	1558442	8.26	5.16	3.96	2.48
11	18	46.2	21.6	43.3	64.9	1298701	9.91	6.19	4.76	2.97
11	19	48.7	20.5	41.1	61.6	1232033	10.50	6.54	5.04	3.14
11	20	51.3	19.5	39.0	58.5	1169591	11.00	6.99	5.28	3.36
11	21	53.9	18.6	37.1	55.7	1113173	11.50	7.22	5.52	3.47
11	22	56.4	17.7	35.5	53.2	1063830	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T,24T 96/96/72 PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

2 m
12

GEAR	GEAR	96/96/72 SEEDS/m	AVERAGE S/M SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
					max kph	max mph	max kph	max mph
24	15	173.0	57.7	346000	2.27	1.42	1.09	0.68
24	16	162.7	54.2	3254000	2.42	1.51	1.16	0.72
24	17	152.8	50.9	3056000	2.57	1.61	1.23	0.77
24	18	144.7	48.2	2894000	2.72	1.70	1.31	0.82
24	19	136.8	45.6	2736000	2.88	1.80	1.38	0.86
24	20	129.7	43.2	2594000	3.03	1.89	1.45	0.91
24	21	123.9	41.3	2478000	3.18	2.00	1.53	0.96
24	22	118.0	39.3	2360000	3.33	2.08	1.60	1.00
17	16	115.1	38.4	2302000	3.42	2.14	1.64	1.03
17	17	108.3	36.1	2166000	3.63	2.27	1.74	1.09
17	18	102.2	34.1	2044000	3.85	2.40	1.85	1.15
17	19	96.8	32.3	1936000	4.06	2.54	1.95	1.22
17	20	92.0	30.7	1840000	4.27	2.67	2.05	1.28
17	21	87.6	29.2	1752000	4.50	2.80	2.16	1.34
17	22	83.6	27.9	1672000	4.70	2.94	2.26	1.41
13	15	93.9	31.3	1878000	4.19	2.62	2.01	1.26
13	17	82.8	27.6	1656000	4.75	2.97	2.28	1.43
13	18	78.1	26.0	1562000	5.03	3.14	2.41	1.51
13	19	74.1	24.7	1482000	5.31	3.32	2.55	1.59
13	20	70.3	23.4	1406000	5.59	3.49	2.68	1.68
13	21	67.1	22.4	1342000	5.87	3.67	2.82	1.76
13	22	64.0	21.3	1280000	6.15	3.84	2.95	1.84
11	15	79.5	26.5	1590000	4.96	3.10	2.38	1.49
11	18	66.3	22.1	1326000	5.95	3.72	2.86	1.79
11	19	62.6	20.9	1252000	6.28	3.92	3.01	1.88
11	20	59.5	19.8	1190000	6.61	4.13	3.17	1.98
11	21	56.7	18.9	1134000	6.94	4.33	3.33	2.08
11	22	54.1	18.0	1082000	7.27	4.54	3.49	2.18

APPLICATION RATES FOR STAR 19T,24T 144/144/108 PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK 2 m
LINES ON A BED 12

GEAR	GEAR	144/144/108 SEEDS/m	AVERAGE S/M SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
					max kph	max mph	max kph	max mph
24	15	259.4	86.5	5188000	2.27	1.42	1.09	0.68
24	16	243.4	81.1	4868000	2.42	1.51	1.16	0.72
24	17	229.2	76.4	4584000	2.57	1.61	1.23	0.77
24	18	216.5	72.2	4330000	2.72	1.70	1.31	0.82
24	19	205.2	68.4	4104000	2.88	1.80	1.38	0.86
24	20	195.0	65.0	3900000	3.03	1.89	1.45	0.91
24	21	185.8	61.9	3716000	3.18	2.00	1.53	0.96
24	22	177.4	59.1	3548000	3.33	2.08	1.60	1.00
17	16	173.0	57.7	3460000	3.42	2.14	1.64	1.03
17	17	162.7	54.2	3254000	3.63	2.27	1.74	1.09
17	18	153.6	51.2	3072000	3.85	2.40	1.85	1.15
17	19	145.5	48.5	2910000	4.06	2.54	1.95	1.22
17	20	138.2	46.1	2764000	4.27	2.67	2.05	1.28
17	21	131.6	43.9	2632000	4.50	2.80	2.16	1.34
17	22	125.6	41.9	2512000	4.70	2.94	2.26	1.41
13	15	141.0	47.0	2820000	4.19	2.62	2.01	1.26
13	17	124.4	41.5	2488000	4.75	2.97	2.28	1.43
13	18	117.5	39.2	2350000	5.03	3.14	2.41	1.51
13	19	111.3	37.1	2226000	5.31	3.32	2.55	1.59
13	20	105.8	35.3	2116000	5.59	3.49	2.68	1.68
13	21	100.7	33.6	2014000	5.87	3.67	2.82	1.76
13	22	96.2	32.1	1924000	6.15	3.84	2.95	1.84
11	15	119.0	39.7	2380000	4.96	3.10	2.38	1.49
11	18	99.3	33.1	1986000	5.95	3.72	2.86	1.79
11	19	94.2	31.4	1884000	6.28	3.92	3.01	1.88
11	20	89.3	29.8	1786000	6.61	4.13	3.17	1.98
11	21	85.1	28.4	1702000	6.94	4.33	3.33	2.08
11	22	81.1	27.0	1622000	7.27	4.54	3.49	2.18

APPLICATION RATES FOR STAR 19T,40T 144/144/108 PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

2 m
12

GEAR	GEAR	144/144/108 SEEDS/m	AVERAGE SEEDS/m	SEEDS/ha	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
					max kph	max mph	max kph	max mph
24	15	156.3	52.1	3126000	2.27	1.42	1.09	0.68
24	16	146.3	48.8	2926000	2.42	1.51	1.16	0.72
24	17	137.5	45.8	2750000	2.57	1.61	1.23	0.77
24	18	129.7	43.2	2594000	2.72	1.70	1.31	0.82
24	19	123.3	41.1	2466000	2.88	1.80	1.38	0.86
24	20	117.0	39.0	2340000	3.03	1.89	1.45	0.91
24	21	111.3	37.1	2226000	3.18	2.00	1.53	0.96
24	22	106.2	35.4	2124000	3.33	2.08	1.60	1.00
17	16	103.4	34.5	2068000	3.42	2.14	1.64	1.03
17	17	97.5	32.5	1950000	3.63	2.27	1.74	1.09
17	18	92.0	30.7	1840000	3.85	2.40	1.85	1.15
17	19	87.3	29.1	1746000	4.06	2.54	1.95	1.22
17	20	82.8	27.6	1656000	4.27	2.67	2.05	1.28
17	21	79.0	26.3	1580000	4.50	2.80	2.16	1.34
17	22	75.3	25.1	1506000	4.70	2.94	2.26	1.41
13	15	84.6	28.2	1692000	4.19	2.62	2.01	1.26
13	17	74.5	24.8	1490000	4.75	2.97	2.28	1.43
13	18	70.3	23.4	1406000	5.03	3.14	2.41	1.51
13	19	66.7	22.2	1334000	5.31	3.32	2.55	1.59
13	20	63.4	21.1	1268000	5.59	3.49	2.68	1.68
13	21	60.3	20.1	1206000	5.87	3.67	2.82	1.76
13	22	57.7	19.2	1154000	6.15	3.84	2.95	1.84
11	15	71.4	23.8	1428000	4.96	3.10	2.38	1.49
11	18	59.5	19.8	1190000	5.95	3.72	2.86	1.79
11	19	56.5	18.8	1130000	6.28	3.92	3.01	1.88
11	20	53.6	17.9	1072000	6.61	4.13	3.17	1.98
11	21	51.0	17.0	1020000	6.94	4.33	3.33	2.08
11	22	48.8	16.3	976000	7.27	4.54	3.49	2.18

APPLICATION RATES - WHEEL TRACK 60" LINES 12

APPLICATION RATES FOR STAR 19T/24T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

60 inches
12

GEAR	GEAR	12 HOLES SEED SPACING (ins)	1 LINE SEEDS/ft	2 LINE SEEDS/ft	3 LINE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	5.00	2.40	4.80	7.20	250906	2.27	1.42	1.09	0.68
24	16	5.33	2.25	4.50	6.75	235371	2.42	1.51	1.16	0.72
24	17	5.66	2.12	4.24	6.36	221648	2.57	1.61	1.23	0.77
24	18	6.00	2.00	4.00	6.00	209088	2.72	1.70	1.31	0.82
24	19	6.33	1.90	3.79	5.69	198188	2.88	1.80	1.38	0.86
24	20	6.66	1.80	3.60	5.41	188368	3.03	1.89	1.45	0.91
24	21	7.00	1.71	3.43	5.14	179218	3.18	2.00	1.53	0.96
24	22	7.33	1.64	3.27	4.91	171150	3.33	2.08	1.60	1.00
17	16	7.53	1.59	3.19	4.78	166604	3.42	2.14	1.64	1.03
17	17	8.00	1.50	3.00	4.50	156816	3.63	2.27	1.74	1.09
17	18	8.47	1.42	2.83	4.25	148114	3.85	2.40	1.85	1.15
17	19	8.94	1.34	2.68	4.03	140328	4.06	2.54	1.95	1.22
17	20	9.41	1.28	2.55	3.83	133319	4.27	2.67	2.05	1.28
17	21	9.88	1.21	2.43	3.64	126977	4.50	2.80	2.16	1.34
17	22	10.30	1.17	2.33	3.50	121799	4.70	2.94	2.26	1.41
13	15	9.23	1.30	2.60	3.90	135919	4.19	2.62	2.01	1.26
13	17	10.50	1.14	2.29	3.43	119479	4.75	2.97	2.28	1.43
13	18	11.10	1.08	2.16	3.24	113021	5.03	3.14	2.41	1.51
13	19	11.70	1.03	2.05	3.08	107225	5.31	3.32	2.55	1.59
13	20	12.30	0.98	1.95	2.93	101994	5.59	3.49	2.68	1.68
13	21	12.30	0.98	1.95	2.93	101994	5.87	3.67	2.82	1.76
13	22	13.50	0.89	1.78	2.67	92928	6.15	3.84	2.95	1.84
11	15	10.90	1.10	2.20	3.30	115094	4.96	3.10	2.38	1.49
11	18	13.10	0.92	1.83	2.75	95765	5.95	3.72	2.86	1.79
11	19	13.80	0.87	1.74	2.61	90908	6.28	3.92	3.01	1.88
11	20	14.50	0.83	1.66	2.48	86519	6.61	4.13	3.17	1.98
11	21	15.30	0.78	1.57	2.35	81995	6.94	4.33	3.33	2.08
11	22	16.00	0.75	1.50	2.25	78408	7.27	4.54	3.49	2.18

APPLICATION RATES FOR STAR 19T/40T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED-

60 inches
12

GEAR	GEAR	12 HOLES SEED SPACING (ins)	1 LINE SEEDS/ft	2 LINE SEEDS/ft	3 LINE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	8.33	1.44	2.88	4.32	150604	3.78	2.37	1.81	1.14
24	16	8.89	1.35	2.70	4.05	141117	4.04	2.52	1.94	1.21
24	17	9.44	1.27	2.54	3.81	132895	4.29	2.68	2.06	1.29
24	18	10.00	1.20	2.40	3.60	125453	4.54	2.84	2.18	1.36
24	19	10.60	1.13	2.26	3.40	118352	4.79	3.00	2.30	1.44
24	20	11.10	1.08	2.16	3.24	113021	5.05	3.15	2.42	1.51
24	21	11.70	1.03	2.05	3.08	107225	5.30	3.31	2.54	1.59
24	22	12.20	0.98	1.97	2.95	102830	5.55	3.47	2.66	1.67
17	16	12.50	0.96	1.92	2.88	100362	5.70	3.56	2.74	1.71
17	17	13.30	0.90	1.80	2.71	94325	6.05	3.78	2.90	1.81
17	18	14.10	0.85	1.70	2.55	88974	6.41	4.00	3.08	1.92
17	19	14.90	0.81	1.61	2.42	84197	6.77	4.23	3.25	2.03
17	20	15.70	0.76	1.53	2.29	79906	7.12	4.45	3.42	2.14
17	21	16.50	0.73	1.45	2.18	76032	7.48	4.67	3.59	2.24
17	22	17.20	0.70	1.40	2.09	72938	7.84	4.90	3.76	2.35
13	15	15.40	0.78	1.56	2.34	81463	7.00	4.37	3.36	2.10
13	17	17.40	0.69	1.38	2.07	72099	7.92	4.95	3.80	2.38
13	18	18.50	0.65	1.30	1.95	67812	8.38	5.24	4.02	2.52
13	19	19.50	0.62	1.23	1.85	64335	8.85	5.53	4.25	2.65
13	20	20.50	0.59	1.17	1.76	61196	9.32	5.82	4.47	2.79
13	21	21.50	0.56	1.12	1.67	58350	9.78	6.11	4.69	2.93
13	22	22.60	0.53	1.06	1.59	55510	10.20	6.40	4.90	3.07
11	15	18.20	0.66	1.32	1.98	68930	8.26	5.16	3.96	2.48
11	18	21.80	0.55	1.10	1.65	57547	9.91	6.19	4.76	2.97
11	19	23.00	0.52	1.04	1.57	54545	10.50	6.54	5.04	3.14
11	20	24.20	0.50	0.99	1.49	51840	11.00	6.99	5.28	3.36
11	21	25.40	0.47	0.94	1.42	49391	11.50	7.22	5.52	3.47
11	22	26.70	0.45	0.90	1.35	46986	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/24T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

60 inches
12'

GEAR	GEAR	24 HOLES SEED SPACING (ins)	1 LINE SEEDS/ft	2 LINE SEEDS/ft	3 LINE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	2.50	4.80	9.60	14.40	501811	3.78	2.37	1.81	1.14
24	16	2.67	4.49	8.99	13.48	469861	4.04	2.52	1.94	1.21
24	17	2.83	4.24	8.48	12.72	443296	4.29	2.68	2.06	1.29
24	18	3.00	4.00	8.00	12.00	418176	4.54	2.84	2.18	1.36
24	19	3.17	3.79	7.57	11.36	395750	4.79	3.00	2.30	1.44
24	20	3.33	3.60	7.21	10.81	376735	5.05	3.15	2.42	1.51
24	21	3.50	3.43	6.86	10.29	358437	5.30	3.31	2.54	1.59
24	22	3.66	3.28	6.56	9.84	342767	5.55	3.47	2.66	1.67
17	16	3.76	3.19	6.38	9.57	333651	5.70	3.56	2.74	1.71
17	17	4.00	3.00	6.00	9.00	313632	6.05	3.78	2.90	1.81
17	18	4.23	2.84	5.67	8.51	296679	6.41	4.00	3.08	1.92
17	19	4.47	2.68	5.37	8.05	280655	6.77	4.23	3.25	2.03
17	20	4.70	2.55	5.11	7.66	266921	7.12	4.45	3.42	2.14
17	21	4.94	2.43	4.86	7.29	253953	7.48	4.67	3.59	2.24
17	22	5.17	2.32	4.64	6.96	242655	7.84	4.90	3.76	2.35
13	15	4.61	2.60	5.21	7.81	272132	7.00	4.37	3.36	2.10
13	17	5.23	2.29	4.59	6.88	239872	7.92	4.95	3.80	2.38
13	18	5.54	2.17	4.33	6.50	226449	8.38	5.24	4.02	2.52
13	19	5.84	2.05	4.11	6.16	214816	8.85	5.53	4.25	2.65
13	20	6.15	1.95	3.90	5.85	203988	9.32	5.82	4.47	2.79
13	21	6.46	1.86	3.72	5.57	194199	9.78	6.11	4.69	2.93
13	22	6.77	1.77	3.55	5.32	185307	10.20	6.40	4.90	3.07
11	15	5.45	2.20	4.40	6.61	230189	8.26	5.16	3.96	2.48
11	18	6.54	1.83	3.67	5.50	191824	9.91	6.19	4.76	2.97
11	19	6.91	1.74	3.47	5.21	181553	10.50	6.54	5.04	3.14
11	20	7.27	1.65	3.30	4.95	172562	11.00	6.99	5.28	3.36
11	21	7.63	1.57	3.15	4.72	164420	11.50	7.22	5.52	3.47
11	22	8.00	1.50	3.00	4.50	156816	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/40T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK 60 inches
LINES ON A BED 12

GEAR	GEAR	24 HOLES SEED SPACING (ins)	1 LINE SEEDS/ft	2 LINE SEEDS/ft	3 LINE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	4.16	2.88	5.77	8.65	301569	3.78	2.37	1.81	1.14
24	16	4.44	2.70	5.41	8.11	282551	4.04	2.52	1.94	1.21
24	17	4.72	2.54	5.08	7.63	265790	4.29	2.68	2.06	1.29
24	18	5.00	2.40	4.80	7.20	250906	4.54	2.84	2.18	1.36
24	19	5.28	2.27	4.55	6.82	237600	4.79	3.00	2.30	1.44
24	20	5.55	2.16	4.32	6.49	226041	5.05	3.15	2.42	1.51
24	21	5.83	2.06	4.12	6.17	215185	5.30	3.31	2.54	1.59
24	22	6.11	1.96	3.93	5.89	205324	5.55	3.47	2.66	1.67
17	16	6.27	1.91	3.83	5.74	200084	5.70	3.56	2.74	1.71
17	17	6.66	1.80	3.60	5.41	188368	6.05	3.78	2.90	1.81
17	18	7.06	1.70	3.40	5.10	177695	6.41	4.00	3.08	1.92
17	19	7.45	1.61	3.22	4.83	168393	6.77	4.23	3.25	2.03
17	20	7.84	1.53	3.06	4.59	160016	7.12	4.45	3.42	2.14
17	21	8.23	1.46	2.92	4.37	152434	7.48	4.67	3.59	2.24
17	22	8.62	1.39	2.78	4.18	145537	7.84	4.90	3.76	2.35
13	15	7.69	1.56	3.12	4.68	163138	7.00	4.37	3.36	2.10
13	17	8.71	1.38	2.76	4.13	144033	7.92	4.95	3.80	2.38
13	18	9.23	1.30	2.60	3.90	135919	8.38	5.24	4.02	2.52
13	19	9.74	1.23	2.46	3.70	128802	8.85	5.53	4.25	2.65
13	20	10.30	1.17	2.33	3.50	121799	9.32	5.82	4.47	2.79
13	21	10.80	1.11	2.22	3.33	116160	9.78	6.11	4.69	2.93
13	22	11.30	1.06	2.12	3.19	111020	10.20	6.40	4.90	3.07
11	15	9.09	1.32	2.64	3.96	138012	8.26	5.16	3.96	2.48
11	18	10.90	1.10	2.20	3.30	115094	9.91	6.19	4.76	2.97
11	19	11.50	1.04	2.09	3.13	109089	10.50	6.54	5.04	3.14
11	20	12.10	0.99	1.98	2.98	103680	11.00	6.99	5.28	3.36
11	21	12.70	0.94	1.89	2.83	98782	11.50	7.22	5.52	3.47
11	22	13.30	0.90	1.80	2.71	94325	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/24T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK 60 inches
LINES ON A BED 12

GEAR	GEAR	48 HOLES SEED SPACING (ins)	1 LINE SEEDS/ft	2 LINE SEEDS/ft	3 LINE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	1.25	9.60	19.20	28.80	1003622	3.78	2.37	1.81	1.14
24	16	1.33	9.02	18.05	27.07	943254	4.04	2.52	1.94	1.21
24	17	1.42	8.45	16.90	25.36	883470	4.29	2.68	2.06	1.29
24	18	1.50	8.00	16.00	24.00	836352	4.54	2.84	2.18	1.36
24	19	1.58	7.59	15.19	22.78	794005	4.79	3.00	2.30	1.44
24	20	1.67	7.19	14.37	21.56	751214	5.05	3.15	2.42	1.51
24	21	1.75	6.86	13.71	20.57	716873	5.30	3.31	2.54	1.59
24	22	1.83	6.56	13.11	19.67	685534	5.55	3.47	2.66	1.67
17	16	1.88	6.38	12.77	19.15	667302	5.70	3.56	2.74	1.71
17	17	2.00	6.00	12.00	18.00	627264	6.05	3.78	2.90	1.81
17	18	2.12	5.66	11.32	16.98	591758	6.41	4.00	3.08	1.92
17	19	2.23	5.38	10.76	16.14	562569	6.77	4.23	3.25	2.03
17	20	2.35	5.11	10.21	15.32	533842	7.12	4.45	3.42	2.14
17	21	2.47	4.86	9.72	14.57	507906	7.48	4.67	3.59	2.24
17	22	2.59	4.63	9.27	13.90	484374	7.84	4.90	3.76	2.35
13	15	2.31	5.19	10.39	15.58	543086	7.00	4.37	3.36	2.10
13	17	2.61	4.60	9.20	13.79	480662	7.92	4.95	3.80	2.38
13	18	2.77	4.33	8.66	13.00	452898	8.38	5.24	4.02	2.52
13	19	2.92	4.11	8.22	12.33	429633	8.85	5.53	4.25	2.65
13	20	3.08	3.90	7.79	11.69	407314	9.32	5.82	4.47	2.79
13	21	3.23	3.72	7.43	11.15	388399	9.78	6.11	4.69	2.93
13	22	3.38	3.55	7.10	10.65	371162	10.20	6.40	4.90	3.07
11	15	2.73	4.40	8.79	13.19	459534	8.26	5.16	3.96	2.48
11	18	3.27	3.67	7.34	11.01	383648	9.91	6.19	4.76	2.97
11	19	3.45	3.48	6.96	10.43	363631	10.50	6.54	5.04	3.14
11	20	3.63	3.31	6.61	9.92	345600	11.00	6.99	5.28	3.36
11	21	3.82	3.14	6.28	9.42	328410	11.50	7.22	5.52	3.47
11	22	4.00	3.00	6.00	9.00	313632	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/40T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

60 inches
12

GEAR	GEAR	48 HOLES SEED SPACING (ins)	1 LINE SEEDS/ft	2 LINE SEEDS/ft	3 LINE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	2.08	5.77	11.54	17.31	603138	3.78	2.37	1.81	1.14
24	16	2.22	5.41	10.81	16.22	565103	4.04	2.52	1.94	1.21
24	17	2.36	5.08	10.17	15.25	531580	4.29	2.68	2.06	1.29
24	18	2.50	4.80	9.60	14.40	501811	4.54	2.84	2.18	1.36
24	19	2.64	4.55	9.09	13.64	475200	4.79	3.00	2.30	1.44
24	20	2.78	4.32	8.63	12.95	451269	5.05	3.15	2.42	1.51
24	21	2.92	4.11	8.22	12.33	429633	5.30	3.31	2.54	1.59
24	22	3.05	3.93	7.87	11.80	411321	5.55	3.47	2.66	1.67
17	16	3.14	3.82	7.64	11.46	399531	5.70	3.56	2.74	1.71
17	17	3.33	3.60	7.21	10.81	376735	6.05	3.78	2.90	1.81
17	18	3.53	3.40	6.80	10.20	355390	6.41	4.00	3.08	1.92
17	19	3.72	3.23	6.45	9.68	337239	6.77	4.23	3.25	2.03
17	20	3.92	3.06	6.12	9.18	320033	7.12	4.45	3.42	2.14
17	21	4.12	2.91	5.83	8.74	304497	7.48	4.67	3.59	2.24
17	22	4.31	2.78	5.57	8.35	291074	7.84	4.90	3.76	2.35
13	15	3.84	3.13	6.25	9.38	326700	7.00	4.37	3.36	2.10
13	17	4.36	2.75	5.50	8.26	287736	7.92	4.95	3.80	2.38
13	18	4.61	2.60	5.21	7.81	272132	8.38	5.24	4.02	2.52
13	19	4.87	2.46	4.93	7.39	257603	8.85	5.53	4.25	2.65
13	20	5.13	2.34	4.68	7.02	244547	9.32	5.82	4.47	2.79
13	21	5.38	2.23	4.46	6.69	233184	9.78	6.11	4.69	2.93
13	22	5.64	2.13	4.26	6.38	222434	10.20	6.40	4.90	3.07
11	15	4.54	2.64	5.29	7.93	276328	8.26	5.16	3.96	2.48
11	18	5.45	2.20	4.40	6.61	230189	9.91	6.19	4.76	2.97
11	19	5.76	2.08	4.17	6.25	217800	10.50	6.54	5.04	3.14
11	20	6.06	1.98	3.96	5.94	207018	11.00	6.99	5.28	3.36
11	21	6.36	1.89	3.77	5.66	197253	11.50	7.22	5.52	3.47
11	22	6.66	1.80	3.60	5.41	188368	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/24T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

60 inches
12

GEAR	GEAR	72 HOLES SEED SPACING (ins)	1 LINE SEEDS/ft	2 LINE SEEDS/ft	3 LINE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	0.83	14.46	28.92	43.37	1511480	3.78	2.37	1.81	1.14
24	16	0.89	13.48	26.97	40.45	1409582	4.04	2.52	1.94	1.21
24	17	0.94	12.77	25.53	38.30	1334604	4.29	2.68	2.06	1.29
24	18	1.00	12.00	24.00	36.00	1254528	4.54	2.84	2.18	1.36
24	19	1.06	11.32	22.64	33.96	1183517	4.79	3.00	2.30	1.44
24	20	1.11	10.81	21.62	32.43	1130205	5.05	3.15	2.42	1.51
24	21	1.67	7.19	14.37	21.56	751214	5.30	3.31	2.54	1.59
24	22	1.22	9.84	19.67	29.51	1028302	5.55	3.47	2.66	1.67
17	16	1.25	9.60	19.20	28.80	1003622	5.70	3.56	2.74	1.71
17	17	1.33	9.02	18.05	27.07	943254	6.05	3.78	2.90	1.81
17	18	1.41	8.51	17.02	25.53	889736	6.41	4.00	3.08	1.92
17	19	1.49	8.05	16.11	24.16	841965	6.77	4.23	3.25	2.03
17	20	1.57	7.64	15.29	22.93	799062	7.12	4.45	3.42	2.14
17	21	1.65	7.27	14.55	21.82	760320	7.48	4.67	3.59	2.24
17	22	1.72	6.98	13.95	20.93	729377	7.84	4.90	3.76	2.35
13	15	1.54	7.79	15.58	23.38	814629	7.00	4.37	3.36	2.10
13	17	1.74	6.90	13.79	20.69	720993	7.92	4.95	3.80	2.38
13	18	1.85	6.49	12.97	19.46	678123	8.38	5.24	4.02	2.52
13	19	1.95	6.15	12.31	18.46	643348	8.85	5.53	4.25	2.65
13	20	2.05	5.85	11.71	17.56	611965	9.32	5.82	4.47	2.79
13	21	2.15	5.58	11.16	16.74	583501	9.78	6.11	4.69	2.93
13	22	2.56	4.69	9.38	14.06	490050	10.20	6.40	4.90	3.07
11	15	1.82	6.59	13.19	19.78	689301	8.26	5.16	3.96	2.48
11	18	2.18	5.50	11.01	16.51	575472	9.91	6.19	4.76	2.97
11	19	2.30	5.22	10.43	15.65	545447	10.50	6.54	5.04	3.14
11	20	2.42	4.96	9.92	14.88	518400	11.00	6.99	5.28	3.36
11	21	2.54	4.72	9.45	14.17	493909	11.50	7.22	5.52	3.47
11	22	2.67	4.49	8.99	13.48	469861	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/24T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK 60 inches

LINES ON A BED 12

GEAR	GEAR	96 HOLES SEED SPACING (ins)	1 LINE SEEDS/ft	2 LINE SEEDS/ft	3 LINE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	0.62	19.35	38.71	58.06	2023432	3.78	2.37	1.81	1.14
24	16	0.67	17.91	35.82	53.73	1872430	4.04	2.52	1.94	1.21
24	17	0.70	17.14	34.29	51.43	1792183	4.29	2.68	2.06	1.29
24	18	0.75	16.00	32.00	48.00	1672704	4.54	2.84	2.18	1.36
24	19	0.79	15.19	30.38	45.57	1588010	4.79	3.00	2.30	1.44
24	20	0.83	14.46	28.92	43.37	1511480	5.05	3.15	2.42	1.51
24	21	0.87	13.79	27.59	41.38	1441986	5.30	3.31	2.54	1.59
24	22	0.92	13.04	26.09	39.13	1363617	5.55	3.47	2.66	1.67
17	16	0.94	12.77	25.53	38.30	1334604	5.70	3.56	2.74	1.71
17	17	1.00	12.00	24.00	36.00	1254528	6.05	3.78	2.90	1.81
17	18	1.06	11.32	22.64	33.96	1183517	6.41	4.00	3.08	1.92
17	19	1.12	10.71	21.43	32.14	1120114	6.77	4.23	3.25	2.03
17	20	1.18	10.17	20.34	30.51	1063159	7.12	4.45	3.42	2.14
17	21	1.23	9.76	19.51	29.27	1019941	7.48	4.67	3.59	2.24
17	22	1.29	9.30	18.60	27.91	972502	7.84	4.90	3.76	2.35
13	15	1.15	10.43	20.87	31.30	1090894	7.00	4.37	3.36	2.10
13	17	1.31	9.16	18.32	27.48	957655	7.92	4.95	3.80	2.38
13	18	1.38	8.70	17.39	26.09	909078	8.38	5.24	4.02	2.52
13	19	1.46	8.22	16.44	24.66	859266	8.85	5.53	4.25	2.65
13	20	1.54	7.79	15.58	23.38	814629	9.32	5.82	4.47	2.79
13	21	1.61	7.45	14.91	22.36	779210	9.78	6.11	4.69	2.93
13	22	1.69	7.10	14.20	21.30	742324	10.20	6.40	4.90	3.07
11	15	1.36	8.82	17.65	26.47	922447	8.26	5.16	3.96	2.48
11	18	1.64	7.32	14.63	21.95	764956	9.91	6.19	4.76	2.97
11	19	1.73	6.94	13.87	20.81	725161	10.50	6.54	5.04	3.14
11	20	1.82	6.59	13.19	19.78	689301	11.00	6.99	5.28	3.36
11	21	1.91	6.28	12.57	18.85	656821	11.50	7.22	5.52	3.47
11	22	2.00	6.00	12.00	18.00	627264	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/40T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

60 inches

12

GEAR	GEAR	72 HOLES SEED SPACING (ins)	1 LINE SEEDS/ft	2 LINE SEEDS/ft	3 LINE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	1.38	8.70	17.39	26.09	909078	3.78	2.37	1.81	1.14
24	16	1.48	8.11	16.22	24.32	847654	4.04	2.52	1.94	1.21
24	17	1.57	7.64	15.29	22.93	799062	4.29	2.68	2.06	1.29
24	18	1.67	7.19	14.37	21.56	751214	4.54	2.84	2.18	1.36
24	19	1.76	6.82	13.64	20.45	712800	4.79	3.00	2.30	1.44
24	20	1.85	6.49	12.97	19.46	678123	5.05	3.15	2.42	1.51
24	21	1.94	6.19	12.37	18.56	646664	5.30	3.31	2.54	1.59
24	22	2.04	5.88	11.76	17.65	614965	5.55	3.47	2.66	1.67
17	16	2.09	5.74	11.48	17.22	600253	5.70	3.56	2.74	1.71
17	17	2.22	5.41	10.81	16.22	565103	6.05	3.78	2.90	1.81
17	18	2.35	5.11	10.21	15.32	533842	6.41	4.00	3.08	1.92
17	19	2.48	4.84	9.68	14.52	505858	6.77	4.23	3.25	2.03
17	20	2.61	4.60	9.20	13.79	480662	7.12	4.45	3.42	2.14
17	21	2.74	4.38	8.76	13.14	457857	7.48	4.67	3.59	2.24
17	22	2.87	4.18	8.36	12.54	437118	7.84	4.90	3.76	2.35
13	15	2.56	4.69	9.38	14.06	490050	7.00	4.37	3.36	2.10
13	17	2.90	4.14	8.28	12.41	432596	7.92	4.95	3.80	2.38
13	18	3.08	3.90	7.79	11.69	407314	8.38	5.24	4.02	2.52
13	19	3.25	3.69	7.38	11.08	386009	8.85	5.53	4.25	2.65
13	20	3.42	3.51	7.02	10.53	366821	9.32	5.82	4.47	2.79
13	21	3.59	3.34	6.69	10.03	349451	9.78	6.11	4.69	2.93
13	22	3.76	3.19	6.38	9.57	333651	10.20	6.40	4.90	3.07
11	15	3.03	3.96	7.92	11.88	414036	8.26	5.16	3.96	2.48
11	18	3.63	3.31	6.61	9.92	345600	9.91	6.19	4.76	2.97
11	19	3.84	3.13	6.25	9.38	326700	10.50	6.54	5.04	3.14
11	20	4.04	2.97	5.94	8.91	310527	11.00	6.99	5.28	3.36
11	21	4.24	2.83	5.66	8.49	295879	11.50	7.22	5.52	3.47
11	22	4.44	2.70	5.41	8.11	282551	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/40T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

60 inches
12

GEAR	GEAR	96 HOLES SEED SPACING (ins)	1 LINE SEEDS/ft	2 LINE SEEDS/ft	3 LINE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	1.04	11.54	23.08	34.62	1206277	3.78	2.37	1.81	1.14
24	16	1.11	10.81	21.62	32.43	1130205	4.04	2.52	1.94	1.21
24	17	1.18	10.17	20.34	30.51	1063159	4.29	2.68	2.06	1.29
24	18	1.25	9.60	19.20	28.80	1003622	4.54	2.84	2.18	1.36
24	19	1.32	9.09	18.18	27.27	950400	4.79	3.00	2.30	1.44
24	20	1.39	8.63	17.27	25.90	902538	5.05	3.15	2.42	1.51
24	21	1.46	8.22	16.44	24.66	859266	5.30	3.31	2.54	1.59
24	22	1.53	7.84	15.69	23.53	819953	5.55	3.47	2.66	1.67
17	16	1.57	7.64	15.29	22.93	799062	5.70	3.56	2.74	1.71
17	17	1.67	7.19	14.37	21.56	751214	6.05	3.78	2.90	1.81
17	18	1.76	6.82	13.64	20.45	712800	6.41	4.00	3.08	1.92
17	19	1.86	6.45	12.90	19.35	674477	6.77	4.23	3.25	2.03
17	20	1.96	6.12	12.24	18.37	640065	7.12	4.45	3.42	2.14
17	21	2.06	5.83	11.65	17.48	608994	7.48	4.67	3.59	2.24
17	22	2.16	5.56	11.11	16.67	580800	7.84	4.90	3.76	2.35
13	15	1.92	6.25	12.50	18.75	653400	7.00	4.37	3.36	2.10
13	17	2.18	5.50	11.01	16.51	575472	7.92	4.95	3.80	2.38
13	18	2.31	5.19	10.39	15.58	543086	8.38	5.24	4.02	2.52
13	19	2.43	4.94	9.88	14.81	516267	8.85	5.53	4.25	2.65
13	20	2.56	4.69	9.38	14.06	490050	9.32	5.82	4.47	2.79
13	21	2.69	4.46	8.92	13.38	466367	9.78	6.11	4.69	2.93
13	22	2.82	4.26	8.51	12.77	444888	10.20	6.40	4.90	3.07
11	15	2.27	5.29	10.57	15.86	552656	8.26	5.16	3.96	2.48
11	18	2.73	4.40	8.79	13.19	459534	9.91	6.19	4.76	2.97
11	19	2.88	4.17	8.33	12.50	435600	10.50	6.54	5.04	3.14
11	20	3.03	3.96	7.92	11.88	414036	11.00	6.99	5.28	3.36
11	21	3.18	3.77	7.55	11.32	394506	11.50	7.22	5.52	3.47
11	22	3.33	3.60	7.21	10.81	376735	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/40T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

60 inches
12

GEAR	GEAR	120 HOLES SEED SPACING (ins)	1 LINE SEEDS/ft	2 LINE SEEDS/ft	3 LINE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	0.83	14.46	28.92	43.37	1511480	3.78	2.37	1.81	1.14
24	16	0.89	13.48	26.97	40.45	1409582	4.04	2.52	1.94	1.21
24	17	0.94	12.77	25.53	38.30	1334604	4.29	2.68	2.06	1.29
24	18	1.00	12.00	24.00	36.00	1254528	4.54	2.84	2.18	1.36
24	19	1.06	11.32	22.64	33.96	1183517	4.79	3.00	2.30	1.44
24	20	1.11	10.81	21.62	32.43	1130205	5.05	3.15	2.42	1.51
24	21	1.17	10.26	20.51	30.77	1072246	5.30	3.31	2.54	1.59
24	22	1.22	9.84	19.67	29.51	1028302	5.55	3.47	2.66	1.67
17	16	1.25	9.60	19.20	28.80	1003622	5.70	3.56	2.74	1.71
17	17	1.33	9.02	18.05	27.07	943264	6.05	3.78	2.90	1.81
17	18	1.41	8.51	17.02	25.53	889736	6.41	4.00	3.08	1.92
17	19	1.49	8.05	16.11	24.16	841965	6.77	4.23	3.25	2.03
17	20	1.57	7.64	15.29	22.93	799062	7.12	4.45	3.42	2.14
17	21	1.65	7.27	14.55	21.82	760320	7.48	4.67	3.59	2.24
17	22	1.72	6.98	13.95	20.93	729377	7.84	4.90	3.76	2.35
13	15	1.54	7.79	15.58	23.38	814629	7.00	4.37	3.36	2.10
13	17	1.74	6.90	13.79	20.69	720993	7.92	4.95	3.80	2.38
13	18	1.85	6.49	12.97	19.46	678123	8.38	5.24	4.02	2.52
13	19	1.95	6.15	12.31	18.46	643348	8.85	5.53	4.25	2.65
13	20	2.05	5.85	11.71	17.56	611965	9.32	5.82	4.47	2.79
13	21	2.15	5.58	11.16	16.74	583501	9.78	6.11	4.69	2.93
13	22	2.26	5.31	10.62	15.93	555101	10.20	6.40	4.90	3.07
11	15	1.82	6.59	13.19	19.78	689301	8.26	5.16	3.96	2.48
11	18	2.18	5.50	11.01	16.51	575472	9.91	6.19	4.76	2.97
11	19	2.30	5.22	10.43	15.65	545447	10.50	6.54	5.04	3.14
11	20	2.42	4.96	9.92	14.88	518400	11.00	6.99	5.28	3.36
11	21	2.54	4.72	9.45	14.17	493909	11.50	7.22	5.52	3.47
11	22	2.67	4.49	8.99	13.48	469861	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/24T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

60 inches
12

GEAR	GEAR	144 HOLES SEED SPACING (ins)	1 LINE SEEDS/ft	2 LINE SEEDS/ft	3 LINE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	0.42	28.57	57.14	85.71	2986971	3.78	2.37	1.81	1.14
24	16	0.44	27.27	54.55	81.82	2851200	4.04	2.52	1.94	1.21
24	17	0.47	25.53	51.06	76.60	2669209	4.29	2.68	2.06	1.29
24	18	0.50	24.00	48.00	72.00	2509056	4.54	2.84	2.18	1.36
24	19	0.53	22.64	45.28	67.92	2367034	4.79	3.00	2.30	1.44
24	20	0.56	21.43	42.86	64.29	2240229	5.05	3.15	2.42	1.51
24	21	0.58	20.69	41.38	62.07	2162979	5.30	3.31	2.54	1.59
24	22	0.61	19.67	39.34	59.02	2056603	5.55	3.47	2.66	1.67
17	16	0.63	19.05	38.10	57.14	1991314	5.70	3.56	2.74	1.71
17	17	0.67	17.91	35.82	53.73	1872430	6.05	3.78	2.90	1.81
17	18	0.71	16.90	33.80	50.70	1766941	6.41	4.00	3.08	1.92
17	19	0.74	16.22	32.43	48.65	1695308	6.77	4.23	3.25	2.03
17	20	0.78	15.38	30.77	46.15	1608369	7.12	4.45	3.42	2.14
17	21	0.82	14.63	29.27	43.90	1529912	7.48	4.67	3.59	2.24
17	22	0.86	13.95	27.91	41.86	1458753	7.84	4.90	3.76	2.35
13	15	0.77	15.58	31.17	46.75	1629257	7.00	4.37	3.36	2.10
13	17	0.87	13.79	27.59	41.38	1441986	7.92	4.95	3.80	2.38
13	18	0.92	13.04	26.09	39.13	1363617	8.38	5.24	4.02	2.52
13	19	0.97	12.37	24.74	37.11	1293328	8.85	5.53	4.25	2.65
13	20	1.03	11.65	23.30	34.95	1217988	9.32	5.82	4.47	2.79
13	21	1.08	11.11	22.22	33.33	1161600	9.78	6.11	4.69	2.93
13	22	1.13	10.62	21.24	31.86	1110202	10.20	6.40	4.90	3.07
11	15	0.91	13.19	26.37	39.56	1378602	8.26	5.16	3.96	2.48
11	18	1.09	11.01	22.02	33.03	1150943	9.91	6.19	4.76	2.97
11	19	1.15	10.43	20.87	31.30	1090894	10.50	6.54	5.04	3.14
11	20	1.21	9.92	19.83	29.75	1036800	11.00	6.99	5.28	3.36
11	21	1.27	9.45	18.90	28.35	987817	11.50	7.22	5.52	3.47
11	22	1.33	9.02	18.05	27.07	943254	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/40T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK 60 inches
LINES ON A BED 12

GEAR	GEAR	144 HOLES SEED SPACING (ins)	1 LINE SEEDS/ft	2 LINE SEEDS/ft	3 LINE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	0.69	17.39	34.78	52.17	1818157	3.78	2.37	1.81	1.14
24	16	0.74	16.22	32.43	48.65	1695308	4.04	2.52	1.94	1.21
24	17	0.79	15.19	30.38	45.57	1588010	4.29	2.68	2.06	1.29
24	18	0.83	14.46	28.92	43.37	1511480	4.54	2.84	2.18	1.36
24	19	0.88	13.64	27.27	40.91	1425600	4.79	3.00	2.30	1.44
24	20	0.93	12.90	25.81	38.71	1348955	5.05	3.15	2.42	1.51
24	21	0.97	12.37	24.74	37.11	1293328	5.30	3.31	2.54	1.59
24	22	1.02	11.76	23.53	35.29	1229929	5.55	3.47	2.66	1.67
17	16	1.05	11.43	22.86	34.29	1194789	5.70	3.56	2.74	1.71
17	17	1.11	10.81	21.62	32.43	1130205	6.05	3.78	2.90	1.81
17	18	1.18	10.17	20.34	30.51	1063159	6.41	4.00	3.08	1.92
17	19	1.24	9.68	19.35	29.03	1011716	6.77	4.23	3.25	2.03
17	20	1.31	9.16	18.32	27.48	957655	7.12	4.45	3.42	2.14
17	21	1.37	8.76	17.52	26.28	915714	7.48	4.67	3.59	2.24
17	22	1.44	8.33	16.67	25.00	871200	7.84	4.90	3.76	2.35
13	15	1.28	9.38	18.75	28.13	980100	7.00	4.37	3.36	2.10
13	17	1.45	8.28	16.55	24.83	865192	7.92	4.95	3.80	2.38
13	18	1.54	7.79	15.58	23.38	814629	8.38	5.24	4.02	2.52
13	19	1.62	7.41	14.81	22.22	774400	8.85	5.53	4.25	2.65
13	20	1.71	7.02	14.04	21.05	733642	9.32	5.82	4.47	2.79
13	21	1.79	6.70	13.41	20.11	700854	9.78	6.11	4.69	2.93
13	22	1.88	6.38	12.77	19.15	667302	10.20	6.40	4.90	3.07
11	15	1.51	7.95	15.89	23.84	830813	8.26	5.16	3.96	2.48
11	18	1.82	6.59	13.19	19.78	689301	9.91	6.19	4.76	2.97
11	19	1.92	6.25	12.50	18.75	653400	10.50	6.54	5.04	3.14
11	20	2.02	5.94	11.88	17.82	621053	11.00	6.99	5.28	3.36
11	21	2.12	5.66	11.32	16.98	591758	11.50	7.22	5.52	3.47
11	22	2.22	5.41	10.81	16.22	565103	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T, 24T 96/96/72 PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

60 inches

12

GEAR	GEAR	96/96/72 HOLES SEEDS/ft	AVERAGE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
					max kph	max mph	max kph	max mph
24	15	53.20	17.73	1853914	2.27	1.42	1.09	0.68
24	16	49.30	16.43	1718006	2.42	1.51	1.16	0.72
24	17	47.10	15.70	1641341	2.57	1.61	1.23	0.77
24	18	44.00	14.67	1533312	2.72	1.70	1.31	0.82
24	19	41.80	13.93	1456846	2.88	1.80	1.38	0.86
24	20	39.80	13.27	1386950	3.03	1.89	1.45	0.91
24	21	37.90	12.63	1320739	3.18	2.00	1.53	0.96
24	22	35.90	11.97	1251043	3.33	2.08	1.60	1.00
17	16	35.10	11.70	1223165	3.42	2.14	1.64	1.03
17	17	33.00	11.00	1149984	3.63	2.27	1.74	1.09
17	18	31.10	10.37	1083773	3.85	2.40	1.85	1.15
17	19	29.50	9.83	1028016	4.06	2.54	1.95	1.22
17	20	28.00	9.33	975744	4.27	2.67	2.05	1.28
17	21	26.80	8.93	933926	4.50	2.80	2.16	1.34
17	22	25.60	8.53	892109	4.70	2.94	2.26	1.41
13	15	28.70	9.57	1000138	4.19	2.62	2.01	1.26
13	17	25.20	8.40	878170	4.75	2.97	2.28	1.43
13	18	23.90	7.97	832867	5.03	3.14	2.41	1.51
13	19	22.60	7.53	787565	5.31	3.32	2.55	1.59
13	20	21.40	7.13	745747	5.59	3.49	2.68	1.68
13	21	20.50	6.83	714384	5.87	3.67	2.82	1.76
13	22	19.50	6.50	679536	6.15	3.84	2.95	1.84
11	15	24.30	8.10	846806	4.96	3.10	2.38	1.49
11	18	20.10	6.70	700445	5.95	3.72	2.86	1.79
11	19	19.10	6.37	665597	6.28	3.92	3.01	1.88
11	20	18.10	6.03	630749	6.61	4.13	3.17	1.98
11	21	17.30	5.77	602870	6.94	4.33	3.33	2.08
11	22	16.50	5.50	574992	7.27	4.54	3.49	2.18

APPLICATION RATES FOR STAR 19T,40T 96/96/72 PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

60 inches
12

GEAR	GEAR	96/96/72 HOLES		AVERAGE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
		SEEDS/ft	SEEDS/ft			max kph	max mph	max kph	max mph
24	15	31.70	10.57	1104682	2.27	1.42	1.09	0.68	
24	16	29.70	9.90	1034986	2.42	1.51	1.16	0.72	
24	17	28.00	9.33	975744	2.57	1.61	1.23	0.77	
24	18	26.40	8.80	919987	2.72	1.70	1.31	0.82	
24	19	25.00	8.33	871200	2.88	1.80	1.38	0.86	
24	20	23.70	7.90	825898	3.03	1.89	1.45	0.91	
24	21	22.60	7.53	787565	3.18	2.00	1.53	0.96	
24	22	21.60	7.20	752717	3.33	2.08	1.60	1.00	
17	16	21.00	7.00	731808	3.42	2.14	1.64	1.03	
17	17	19.80	6.60	689990	3.63	2.27	1.74	1.09	
17	18	18.80	6.27	655142	3.85	2.40	1.85	1.15	
17	19	17.70	5.90	616810	4.06	2.54	1.95	1.22	
17	20	16.80	5.60	585446	4.27	2.67	2.05	1.28	
17	21	16.00	5.33	557568	4.50	2.80	2.16	1.34	
17	22	15.30	5.10	533174	4.70	2.94	2.26	1.41	
13	15	17.20	5.73	599386	4.19	2.62	2.01	1.26	
13	17	15.10	5.03	526205	4.75	2.97	2.28	1.43	
13	18	14.30	4.77	498326	5.03	3.14	2.41	1.51	
13	19	13.60	4.53	473933	5.31	3.32	2.55	1.59	
13	20	12.90	4.30	449539	5.59	3.49	2.68	1.68	
13	21	12.30	4.10	428630	5.87	3.67	2.82	1.76	
13	22	11.70	3.90	407722	6.15	3.84	2.95	1.84	
11	15	14.50	4.83	505296	4.96	3.10	2.38	1.49	
11	18	12.10	4.03	421661	5.95	3.72	2.86	1.79	
11	19	11.50	3.83	400752	6.28	3.92	3.01	1.88	
11	20	10.90	3.63	379843	6.61	4.13	3.17	1.98	
11	21	10.40	3.47	362419	6.94	4.33	3.33	2.08	
11	22	9.90	3.30	344995	7.27	4.54	3.49	2.18	

APPLICATION RATES FOR STAR 19T,24T 144/144/108 PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
 LINES ON A BED

60 inches
 12

GEAR	GEAR	144/144/108 SEEDS/ft	AVERAGE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
					max kph	max mph	max kph	max mph
24	15	78.60	26.20	2739053	2.27	1.42	1.09	0.68
24	16	75.00	25.00	2613600	2.42	1.51	1.16	0.72
24	17	70.20	23.40	2446330	2.57	1.61	1.23	0.77
24	18	66.00	22.00	2299968	2.72	1.70	1.31	0.82
24	19	62.30	20.77	2171030	2.88	1.80	1.38	0.86
24	20	58.90	19.63	2052547	3.03	1.89	1.45	0.91
24	21	56.90	18.97	1982851	3.18	2.00	1.53	0.96
24	22	54.10	18.03	1885277	3.33	2.08	1.60	1.00
17	16	52.40	17.47	1826035	3.42	2.14	1.64	1.03
17	17	49.30	16.43	1718006	3.63	2.27	1.74	1.09
17	18	46.50	15.50	1620432	3.85	2.40	1.85	1.15
17	19	44.60	14.87	1554221	4.06	2.54	1.95	1.22
17	20	42.30	14.10	1474070	4.27	2.67	2.05	1.28
17	21	40.20	13.40	1400890	4.50	2.80	2.16	1.34
17	22	38.40	12.80	1338163	4.70	2.94	2.26	1.41
13	15	42.90	14.30	1494979	4.19	2.62	2.01	1.26
13	17	37.90	12.63	1320739	4.75	2.97	2.28	1.43
13	18	35.90	11.97	1251043	5.03	3.14	2.41	1.51
13	19	34.00	11.33	1184832	5.31	3.32	2.55	1.59
13	20	32.00	10.67	1115136	5.59	3.49	2.68	1.68
13	21	30.60	10.20	1066349	5.87	3.67	2.82	1.76
13	22	29.20	9.73	1017562	6.15	3.84	2.95	1.84
11	15	36.30	12.10	1264982	4.96	3.10	2.38	1.49
11	18	30.30	10.10	1055894	5.95	3.72	2.86	1.79
11	19	28.70	9.57	1000138	6.28	3.92	3.01	1.88
11	20	27.30	9.10	951350	6.61	4.13	3.17	1.98
11	21	26.00	8.67	906048	6.94	4.33	3.33	2.08
11	22	24.80	8.27	864230	7.27	4.54	3.49	2.18

APPLICATION RATES FOR STAR 19T,40T 144/144/108 PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

60 inches
12

GEAR	GEAR	144/144/108 SEEDS/ft	AVERAGE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
					max kph	max mph	max kph	max mph
24	15	47.80	15.98	1665734	2.27	1.42	1.09	0.68
24	16	44.60	14.87	1554221	2.42	1.51	1.16	0.72
24	17	41.80	13.93	1456646	2.57	1.61	1.23	0.77
24	18	39.80	13.27	1386950	2.72	1.70	1.31	0.82
24	19	37.50	12.50	1306800	2.88	1.80	1.38	0.86
24	20	35.50	11.83	1237104	3.03	1.89	1.45	0.91
24	21	34.00	11.33	1184832	3.18	2.00	1.53	0.96
24	22	32.40	10.80	1129075	3.33	2.08	1.60	1.00
17	16	31.40	10.47	1094227	3.42	2.14	1.64	1.03
17	17	29.70	9.90	1034986	3.63	2.27	1.74	1.09
17	18	28.00	9.33	975744	3.85	2.40	1.85	1.15
17	19	26.60	8.87	926957	4.06	2.54	1.95	1.22
17	20	25.20	8.40	878170	4.27	2.67	2.05	1.28
17	21	24.10	8.03	839837	4.50	2.80	2.16	1.34
17	22	22.90	7.63	798019	4.70	2.94	2.26	1.41
13	15	25.80	8.60	899078	4.19	2.62	2.01	1.26
13	17	22.80	7.60	794534	4.75	2.97	2.28	1.43
13	18	21.40	7.13	745747	5.03	3.14	2.41	1.51
13	19	20.40	6.80	710899	5.31	3.32	2.55	1.59
13	20	19.30	6.43	672566	5.59	3.49	2.68	1.68
13	21	18.40	6.13	641203	5.87	3.67	2.82	1.76
13	22	17.60	5.87	613325	6.15	3.84	2.95	1.84
11	15	21.90	7.30	763171	4.96	3.10	2.38	1.49
11	18	18.10	6.03	630749	5.95	3.72	2.86	1.79
11	19	17.20	5.73	599386	6.28	3.92	3.01	1.88
11	20	16.30	5.43	568022	6.61	4.13	3.17	1.98
11	21	15.60	5.20	543629	6.94	4.33	3.33	2.08
11	22	14.90	4.97	519235	7.27	4.54	3.49	2.18

APPLICATION RATES - WHEEL TRACK 72" LINES 12

APPLICATION RATES FOR STAR 19T/24T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

72 inches
12

GEAR	GEAR	12 HOLES SEED SPACING (ins)	1 LINE SEEDS/ft	2 LINE SEEDS/ft	3 LINE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	5.00	2.40	4.80	7.20	209088	2.27	1.42	1.09	0.68
24	16	5.33	2.25	4.50	6.75	196143	2.42	1.51	1.16	0.72
24	17	5.66	2.12	4.24	6.36	184707	2.57	1.61	1.23	0.77
24	18	6.00	2.00	4.00	6.00	174240	2.72	1.70	1.31	0.82
24	19	6.33	1.90	3.79	5.69	165156	2.88	1.80	1.38	0.86
24	20	6.66	1.80	3.60	5.41	156973	3.03	1.89	1.45	0.91
24	21	7.00	1.71	3.43	5.14	149349	3.18	2.00	1.53	0.96
24	22	7.33	1.64	3.27	4.91	142625	3.33	2.08	1.60	1.00
17	16	7.53	1.59	3.19	4.78	138837	3.42	2.14	1.64	1.03
17	17	8.00	1.50	3.00	4.50	130680	3.63	2.27	1.74	1.09
17	18	8.47	1.42	2.83	4.25	123429	3.85	2.40	1.85	1.15
17	19	8.94	1.34	2.68	4.03	116940	4.06	2.54	1.95	1.22
17	20	9.41	1.28	2.55	3.83	111099	4.27	2.67	2.05	1.28
17	21	9.88	1.21	2.43	3.64	105814	4.50	2.80	2.16	1.34
17	22	10.30	1.17	2.33	3.50	101499	4.70	2.94	2.26	1.41
13	15	9.23	1.30	2.60	3.90	113265	4.19	2.62	2.01	1.26
13	17	10.50	1.14	2.29	3.43	99566	4.75	2.97	2.28	1.43
13	18	11.10	1.08	2.16	3.24	94184	5.03	3.14	2.41	1.51
13	19	11.70	1.03	2.05	3.08	89354	5.31	3.32	2.55	1.59
13	20	12.30	0.98	1.95	2.93	84995	5.59	3.49	2.68	1.68
13	21	12.30	0.98	1.95	2.93	84995	5.87	3.67	2.82	1.76
13	22	13.50	0.89	1.78	2.67	77440	6.15	3.84	2.95	1.84
11	15	10.90	1.10	2.20	3.30	95912	4.96	3.10	2.38	1.49
11	18	13.10	0.92	1.83	2.75	79805	5.95	3.72	2.86	1.79
11	19	13.80	0.87	1.74	2.61	75757	6.28	3.92	3.01	1.88
11	20	14.50	0.83	1.66	2.48	72099	6.61	4.13	3.17	1.98
11	21	15.30	0.78	1.57	2.35	68329	6.94	4.33	3.33	2.08
11	22	16.00	0.75	1.50	2.25	65340	7.27	4.54	3.49	2.18

APPLICATION RATES FOR STAR 19T/40T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK 72 inches
 LINES ON A BED 12

GEAR	GEAR	12 HOLES SEED SPACING (ins)	1 LINE SEEDS/ft	2 LINE SEEDS/ft	3 LINE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	8.33	1.44	2.88	4.32	125503	3.78	2.37	1.81	1.14
24	16	8.89	1.35	2.70	4.05	117597	4.04	2.52	1.94	1.21
24	17	9.44	1.27	2.54	3.81	110746	4.29	2.68	2.06	1.29
24	18	10.00	1.20	2.40	3.60	104544	4.54	2.84	2.18	1.36
24	19	10.60	1.13	2.26	3.40	98626	4.79	3.00	2.30	1.44
24	20	11.10	1.08	2.16	3.24	94184	5.05	3.15	2.42	1.51
24	21	11.70	1.03	2.05	3.08	89354	5.30	3.31	2.54	1.59
24	22	12.20	0.98	1.97	2.95	85692	5.55	3.47	2.66	1.67
17	16	12.50	0.96	1.92	2.88	83635	5.70	3.56	2.74	1.71
17	17	13.30	0.90	1.80	2.71	78605	6.05	3.78	2.90	1.81
17	18	14.10	0.85	1.70	2.55	74145	6.41	4.00	3.08	1.92
17	19	14.90	0.81	1.61	2.42	70164	6.77	4.23	3.25	2.03
17	20	15.70	0.76	1.53	2.29	66589	7.12	4.45	3.42	2.14
17	21	16.50	0.73	1.45	2.18	63360	7.48	4.67	3.59	2.24
17	22	17.20	0.70	1.40	2.09	60781	7.84	4.90	3.76	2.35
13	15	15.40	0.78	1.56	2.34	67886	7.00	4.37	3.36	2.10
13	17	17.40	0.69	1.38	2.07	60083	7.92	4.95	3.80	2.38
13	18	18.50	0.65	1.30	1.95	56510	8.38	5.24	4.02	2.52
13	19	19.50	0.62	1.23	1.85	53612	8.85	5.53	4.25	2.65
13	20	20.50	0.59	1.17	1.76	50997	9.32	5.82	4.47	2.79
13	21	21.50	0.56	1.12	1.67	48625	9.78	6.11	4.69	2.93
13	22	22.60	0.53	1.06	1.59	46258	10.20	6.40	4.90	3.07
11	15	18.20	0.66	1.32	1.98	57442	8.26	5.16	3.96	2.48
11	18	21.80	0.55	1.10	1.65	47956	9.91	6.19	4.76	2.97
11	19	23.00	0.52	1.04	1.57	45454	10.50	6.54	5.04	3.14
11	20	24.20	0.50	0.99	1.49	43200	11.00	6.99	5.28	3.36
11	21	25.40	0.47	0.94	1.42	41159	11.50	7.22	5.52	3.47
11	22	26.70	0.45	0.90	1.35	39155	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/24T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK 72 inches
 LINES ON A BED 12

GEAR	GEAR	24 HOLES SEED SPACING (ins)	1 LINE SEEDS/ft	2 LINE SEEDS/ft	3 LINE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	2.50	4.80	9.60	14.40	418176	3.78	2.37	1.81	1.14
24	16	2.67	4.49	8.99	13.48	391551	4.04	2.52	1.94	1.21
24	17	2.83	4.24	8.48	12.72	369413	4.29	2.68	2.06	1.29
24	18	3.00	4.00	8.00	12.00	348480	4.54	2.84	2.18	1.36
24	19	3.17	3.79	7.57	11.36	329792	4.79	3.00	2.30	1.44
24	20	3.33	3.60	7.21	10.81	313946	5.05	3.15	2.42	1.51
24	21	3.50	3.43	6.86	10.29	298697	5.30	3.31	2.54	1.59
24	22	3.66	3.28	6.56	9.84	285639	5.55	3.47	2.66	1.67
17	16	3.76	3.19	6.38	9.57	278043	5.70	3.56	2.74	1.71
17	17	4.00	3.00	6.00	9.00	261360	6.05	3.78	2.90	1.81
17	18	4.23	2.84	5.67	8.51	247149	6.41	4.00	3.08	1.92
17	19	4.47	2.68	5.37	8.05	233879	6.77	4.23	3.25	2.03
17	20	4.70	2.55	5.11	7.66	222434	7.12	4.45	3.42	2.14
17	21	4.94	2.43	4.86	7.29	211628	7.48	4.67	3.59	2.24
17	22	5.17	2.32	4.64	6.96	202213	7.84	4.90	3.76	2.35
13	15	4.61	2.60	5.21	7.81	226777	7.00	4.37	3.36	2.10
13	17	5.23	2.29	4.59	6.88	199893	7.92	4.95	3.80	2.38
13	18	5.54	2.17	4.33	6.50	188708	8.38	5.24	4.02	2.52
13	19	5.84	2.05	4.11	6.16	179014	8.85	5.53	4.25	2.65
13	20	6.15	1.95	3.90	5.85	169990	9.32	5.82	4.47	2.79
13	21	6.46	1.86	3.72	5.57	161833	9.78	6.11	4.69	2.93
13	22	6.77	1.77	3.55	5.32	154422	10.20	6.40	4.90	3.07
11	15	5.45	2.20	4.40	6.61	191824	8.26	5.16	3.96	2.48
11	18	6.54	1.83	3.67	5.50	159853	9.91	6.19	4.76	2.97
11	19	6.91	1.74	3.47	5.21	151294	10.50	6.54	5.04	3.14
11	20	7.27	1.65	3.30	4.95	143802	11.00	6.99	5.28	3.36
11	21	7.63	1.57	3.15	4.72	137017	11.50	7.22	5.52	3.47
11	22	8.00	1.50	3.00	4.50	130680	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/40T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

72 inches
12

GEAR	GEAR	24 HOLES SEED SPACING (ins)	1 LINE SEEDS/ft	2 LINE SEEDS/ft	3 LINE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	4.16	2.88	5.77	8.65	251308	3.78	2.37	1.81	1.14
24	16	4.44	2.70	5.41	8.11	235459	4.04	2.52	1.94	1.21
24	17	4.72	2.54	5.08	7.63	221492	4.29	2.68	2.06	1.29
24	18	5.00	2.40	4.80	7.20	209088	4.54	2.84	2.18	1.36
24	19	5.28	2.27	4.55	6.82	198000	4.79	3.00	2.30	1.44
24	20	5.55	2.16	4.32	6.49	188368	5.05	3.15	2.42	1.51
24	21	5.83	2.06	4.12	6.17	179321	5.30	3.31	2.54	1.59
24	22	6.11	1.96	3.93	5.89	171103	5.55	3.47	2.66	1.67
17	16	6.27	1.91	3.83	5.74	166737	5.70	3.56	2.74	1.71
17	17	6.66	1.80	3.60	5.41	156973	6.05	3.78	2.90	1.81
17	18	7.06	1.70	3.40	5.10	148079	6.41	4.00	3.08	1.92
17	19	7.45	1.61	3.22	4.83	140328	6.77	4.23	3.25	2.03
17	20	7.84	1.53	3.06	4.59	133347	7.12	4.45	3.42	2.14
17	21	8.23	1.46	2.92	4.37	127028	7.48	4.67	3.59	2.24
17	22	8.62	1.39	2.78	4.18	121281	7.84	4.90	3.76	2.35
13	15	7.69	1.56	3.12	4.68	135948	7.00	4.37	3.36	2.10
13	17	8.71	1.38	2.76	4.13	120028	7.92	4.95	3.80	2.38
13	18	9.23	1.30	2.60	3.90	113265	8.38	5.24	4.02	2.52
13	19	9.74	1.23	2.46	3.70	107335	8.85	5.53	4.25	2.65
13	20	10.30	1.17	2.33	3.50	101499	9.32	5.82	4.47	2.79
13	21	10.80	1.11	2.22	3.33	96800	9.78	6.11	4.69	2.93
13	22	11.30	1.06	2.12	3.19	92517	10.20	6.40	4.90	3.07
11	15	9.09	1.32	2.64	3.96	115010	8.26	5.16	3.96	2.48
11	18	10.90	1.10	2.20	3.30	95912	9.91	6.19	4.76	2.97
11	19	11.50	1.04	2.09	3.13	90908	10.50	6.54	5.04	3.14
11	20	12.10	0.99	1.98	2.98	86400	11.00	6.99	5.28	3.36
11	21	12.70	0.94	1.89	2.83	82318	11.50	7.22	5.52	3.47
11	22	13.30	0.90	1.80	2.71	78605	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/24T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

72 inches
12

GEAR	GEAR	48 HOLES SEED SPACING (ins)	1 LINE SEEDS/ft	2 LINE SEEDS/ft	3 LINE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	1.25	9.60	19.20	28.80	836352	3.78	2.37	1.81	1.14
24	16	1.33	9.02	18.05	27.07	786045	4.04	2.52	1.94	1.21
24	17	1.42	8.45	16.90	25.35	736225	4.29	2.68	2.06	1.29
24	18	1.50	8.00	16.00	24.00	696960	4.54	2.84	2.18	1.36
24	19	1.58	7.59	15.19	22.78	661671	4.79	3.00	2.30	1.44
24	20	1.67	7.19	14.37	21.56	626012	5.05	3.15	2.42	1.51
24	21	1.75	6.86	13.71	20.57	597394	5.30	3.31	2.54	1.59
24	22	1.83	6.56	13.11	19.67	571279	5.55	3.47	2.66	1.67
17	16	1.88	6.38	12.77	19.15	556085	5.70	3.56	2.74	1.71
17	17	2.00	6.00	12.00	18.00	522720	6.05	3.78	2.90	1.81
17	18	2.12	5.66	11.32	16.98	493132	6.41	4.00	3.08	1.92
17	19	2.23	5.38	10.76	16.14	468807	6.77	4.23	3.25	2.03
17	20	2.35	5.11	10.21	15.32	444868	7.12	4.45	3.42	2.14
17	21	2.47	4.86	9.72	14.57	423255	7.48	4.67	3.59	2.24
17	22	2.59	4.63	9.27	13.90	403645	7.84	4.90	3.76	2.35
13	15	2.31	5.19	10.39	15.58	452571	7.00	4.37	3.36	2.10
13	17	2.61	4.60	9.20	13.79	400552	7.92	4.95	3.80	2.38
13	18	2.77	4.33	8.66	13.00	377415	8.38	5.24	4.02	2.52
13	19	2.92	4.11	8.22	12.33	358027	8.85	5.53	4.25	2.65
13	20	3.08	3.90	7.79	11.69	339429	9.32	5.82	4.47	2.79
13	21	3.23	3.72	7.43	11.15	323666	9.78	6.11	4.69	2.93
13	22	3.38	3.55	7.10	10.65	309302	10.20	6.40	4.90	3.07
11	15	2.73	4.40	8.79	13.19	382945	8.26	5.16	3.96	2.48
11	18	3.27	3.67	7.34	11.01	319706	9.91	6.19	4.76	2.97
11	19	3.45	3.48	6.96	10.43	303026	10.50	6.54	5.04	3.14
11	20	3.63	3.31	6.61	9.92	288000	11.00	6.99	5.28	3.36
11	21	3.82	3.14	6.28	9.42	273675	11.50	7.22	5.52	3.47
11	22	4.00	3.00	6.00	9.00	261360	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/40T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

72 inches
12

GEAR	GEAR	48 HOLES SEED SPACING (ins)	1 LINE SEEDS/ft	2 LINE SEEDS/ft	3 LINE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	2.08	5.77	11.54	17.31	502615	3.78	2.37	1.81	1.14
24	16	2.22	5.41	10.81	16.22	470919	4.04	2.52	1.94	1.21
24	17	2.36	5.08	10.17	15.25	442983	4.29	2.68	2.06	1.29
24	18	2.50	4.80	9.60	14.40	418176	4.54	2.84	2.18	1.36
24	19	2.64	4.55	9.09	13.64	396000	4.79	3.00	2.30	1.44
24	20	2.78	4.32	8.63	12.95	376058	5.05	3.15	2.42	1.51
24	21	2.92	4.11	8.22	12.33	358027	5.30	3.31	2.54	1.59
17	16	3.05	3.93	7.87	11.80	342767	5.55	3.47	2.66	1.67
17	17	3.14	3.82	7.64	11.46	332943	5.70	3.56	2.74	1.71
17	18	3.33	3.60	7.21	10.81	313946	6.05	3.78	2.90	1.81
17	19	3.53	3.40	6.80	10.20	296159	6.41	4.00	3.08	1.92
17	20	3.72	3.23	6.45	9.68	281032	6.77	4.23	3.25	2.03
17	21	3.92	3.06	6.12	9.18	266694	7.12	4.45	3.42	2.14
17	22	4.12	2.91	5.83	8.74	253748	7.48	4.67	3.59	2.24
13	15	4.31	2.70	5.57	8.35	242561	7.84	4.90	3.76	2.35
13	17	3.84	3.13	6.25	9.38	272250	7.00	4.37	3.36	2.10
13	18	4.36	2.75	5.50	8.26	239780	7.92	4.95	3.80	2.38
13	19	4.61	2.60	5.21	7.81	226777	8.38	5.24	4.02	2.52
13	20	4.87	2.46	4.93	7.39	214669	8.85	5.53	4.25	2.65
13	21	5.13	2.34	4.68	7.02	203789	9.32	5.82	4.47	2.79
13	22	5.38	2.23	4.46	6.69	194320	9.78	6.11	4.69	2.93
11	15	5.64	2.13	4.26	6.38	185362	10.20	6.40	4.90	3.07
11	18	4.54	2.64	5.29	7.93	230273	8.26	5.16	3.96	2.48
11	19	5.45	2.20	4.40	6.61	191824	9.91	6.19	4.76	2.97
11	20	5.76	2.08	4.17	6.25	181500	10.50	6.54	5.04	3.14
11	21	6.06	1.98	3.96	5.94	172515	11.00	6.99	5.28	3.36
11	22	6.36	1.89	3.77	5.66	164377	11.50	7.22	5.52	3.47
11	22	6.66	1.80	3.60	5.41	156973	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/24T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

72 inches
12

GEAR	GEAR	72 HOLES SPEED SPACING (ins)	1 LINE SEEDS/#	2 LINE SEEDS/#	3 LINE SEEDS/#	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	0.83	14.16	28.92	43.37	1259566	3.78	2.37	1.81	1.14
24	16	0.89	13.48	26.97	40.45	1174652	4.04	2.52	1.94	1.21
24	17	0.94	12.77	25.53	38.30	1112170	4.29	2.68	2.06	1.29
24	18	1.00	12.00	24.00	36.00	1045440	4.54	2.84	2.18	1.36
24	19	1.06	11.32	22.64	33.96	986264	4.79	3.00	2.30	1.44
24	20	1.11	10.81	21.62	32.43	941838	5.05	3.15	2.42	1.51
24	21	1.17	10.26	20.51	30.77	893538	5.30	3.31	2.54	1.59
24	22	1.22	9.84	19.67	29.51	856918	5.55	3.47	2.66	1.67
17	16	1.25	9.60	19.20	28.80	836352	5.70	3.56	2.74	1.71
17	17	1.33	9.02	18.05	27.07	786045	6.05	3.78	2.90	1.81
17	18	1.41	8.51	17.02	25.53	741447	6.41	4.00	3.08	1.92
17	19	1.49	8.05	16.11	24.16	701638	6.77	4.23	3.25	2.03
17	20	1.57	7.64	15.29	22.93	665885	7.12	4.45	3.42	2.14
17	21	1.65	7.27	14.55	21.82	633600	7.48	4.67	3.59	2.24
17	22	1.72	6.98	13.95	20.93	607814	7.84	4.90	3.76	2.35
13	15	1.54	7.79	15.58	23.38	678857	7.00	4.37	3.36	2.10
13	17	1.74	6.90	13.79	20.69	600828	7.92	4.95	3.80	2.38
13	18	1.85	6.49	12.97	19.46	565103	8.38	5.24	4.02	2.52
13	19	1.95	6.15	12.31	18.46	536123	8.85	5.53	4.25	2.65
13	20	2.05	5.85	11.71	17.56	509971	9.32	5.82	4.47	2.79
13	21	2.15	5.58	11.16	16.74	486251	9.78	6.11	4.69	2.93
13	22	2.56	4.69	9.38	14.06	408375	10.20	6.40	4.90	3.07
11	15	1.82	6.59	13.19	19.78	574418	8.26	5.16	3.96	2.48
11	18	2.18	5.50	11.01	16.51	479560	9.91	6.19	4.76	2.97
11	19	2.30	5.22	10.43	15.65	454539	10.50	6.54	5.04	3.14
11	20	2.42	4.96	9.92	14.88	432000	11.00	6.99	5.28	3.36
11	21	2.54	4.72	9.45	14.17	411591	11.50	7.22	5.52	3.47
11	22	2.67	4.49	8.99	13.48	391551	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/40T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK 72 inches
LINES ON A BED 12

GEAR	GEAR	72 HOLES SEED SPACING (ins)	1 LINE SEEDS/ft	2 LINE SEEDS/ft	3 LINE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	1.38	8.70	17.39	26.09	757565	3.78	2.37	1.81	1.14
24	16	1.48	8.11	16.22	24.32	706378	4.04	2.52	1.94	1.21
24	17	1.57	7.64	15.29	22.93	665885	4.29	2.68	2.06	1.29
24	18	1.67	7.19	14.37	21.56	626012	4.54	2.84	2.18	1.36
24	19	1.76	6.82	13.64	20.45	594000	4.79	3.00	2.30	1.44
24	20	1.85	6.49	12.97	19.46	565103	5.05	3.15	2.42	1.51
24	21	1.94	6.19	12.37	18.56	538887	5.30	3.31	2.54	1.59
24	22	2.04	5.88	11.76	17.65	512471	5.55	3.47	2.66	1.67
17	16	2.09	5.74	11.48	17.22	500211	5.70	3.56	2.74	1.71
17	17	2.22	5.41	10.81	16.22	470919	6.05	3.78	2.90	1.81
17	18	2.35	5.11	10.21	15.32	444868	6.41	4.00	3.08	1.92
17	19	2.48	4.84	9.68	14.52	421548	6.77	4.23	3.25	2.03
17	20	2.61	4.60	9.20	13.79	400552	7.12	4.45	3.42	2.14
17	21	2.74	4.38	8.76	13.14	381547	7.48	4.67	3.59	2.24
17	22	2.87	4.18	8.36	12.54	364265	7.84	4.90	3.76	2.35
13	15	2.56	4.69	9.38	14.06	408375	7.00	4.37	3.36	2.10
13	17	2.90	4.14	8.28	12.41	360497	7.92	4.95	3.80	2.38
13	18	3.08	3.90	7.79	11.69	339429	8.38	5.24	4.02	2.52
13	19	3.25	3.69	7.38	11.08	321674	8.85	5.53	4.25	2.65
13	20	3.42	3.51	7.02	10.53	305684	9.32	5.82	4.47	2.79
13	21	3.59	3.34	6.69	10.03	291209	9.78	6.11	4.69	2.93
13	22	3.76	3.19	6.38	9.57	278043	10.20	6.40	4.90	3.07
11	15	3.03	3.96	7.92	11.88	345030	8.26	5.16	3.96	2.48
11	18	3.63	3.31	6.61	9.92	288000	9.91	6.19	4.76	2.97
11	19	3.84	3.13	6.25	9.38	272250	10.50	6.54	5.04	3.14
11	20	4.04	2.97	5.94	8.91	258772	11.00	6.99	5.28	3.36
11	21	4.24	2.83	5.66	8.49	246566	11.50	7.22	5.52	3.47
11	22	4.44	2.70	5.41	8.11	235459	12.10	7.57	5.81	3.63



APPLICATION RATES FOR STAR 19T/24T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

72 inches
12

GEAR	GEAR	96 HOLES SEED SPACING (fins)	1 LINE SEEDS/ft	2 LINE SEEDS/ft	3 LINE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	0.62	19.35	38.71	58.06	1686194	3.78	2.37	1.81	1.14
24	16	0.67	17.91	35.82	53.73	1560358	4.04	2.52	1.94	1.21
24	17	0.70	17.14	34.29	51.43	1493486	4.29	2.68	2.06	1.29
24	18	0.75	16.00	32.00	48.00	1393920	4.54	2.84	2.18	1.36
24	19	0.79	15.19	30.38	45.57	1323342	4.79	3.00	2.30	1.44
24	20	0.83	14.46	28.92	43.37	1259566	5.05	3.15	2.42	1.51
24	21	0.87	13.79	27.59	41.38	1201655	5.30	3.31	2.54	1.59
24	22	0.92	13.04	26.09	39.13	1136348	5.55	3.47	2.66	1.67
17	16	0.94	12.77	25.53	38.30	1112170	5.70	3.56	2.74	1.71
17	17	1.00	12.00	24.00	36.00	1045440	6.05	3.78	2.90	1.81
17	18	1.06	11.32	22.64	33.96	986264	6.41	4.00	3.08	1.92
17	19	1.12	10.71	21.43	32.14	933429	6.77	4.23	3.25	2.03
17	20	1.18	10.17	20.34	30.51	885966	7.12	4.45	3.42	2.14
17	21	1.23	9.76	19.51	29.27	849951	7.48	4.67	3.59	2.24
17	22	1.29	9.30	18.60	27.91	810419	7.84	4.90	3.76	2.35
13	15	1.15	10.43	20.87	31.30	909078	7.00	4.37	3.36	2.10
13	17	1.31	9.16	18.32	27.48	798046	7.92	4.95	3.80	2.38
13	18	1.38	8.70	17.39	26.09	757565	8.38	5.24	4.02	2.52
13	19	1.46	8.22	16.44	24.66	716055	8.85	5.53	4.25	2.65
13	20	1.54	7.79	15.58	23.38	678857	9.32	5.82	4.47	2.79
13	21	1.61	7.45	14.91	22.36	649342	9.78	6.11	4.69	2.93
13	22	1.69	7.10	14.20	21.30	618604	10.20	6.40	4.90	3.07
11	15	1.36	8.82	17.65	26.47	768706	8.26	5.16	3.96	2.48
11	18	1.64	7.32	14.63	21.95	637463	9.91	6.19	4.76	2.97
11	19	1.73	6.94	13.87	20.81	604301	10.50	6.54	5.04	3.14
11	20	1.82	6.59	13.19	19.78	574418	11.00	6.99	5.28	3.36
11	21	1.91	6.28	12.57	18.85	547351	11.50	7.22	5.52	3.47
11	22	2.00	6.00	12.00	18.00	522720	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/40T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

72 inches
12

GEAR	GEAR	96 HOLES SEED SPACING (ins)	1 LINE SEEDS/ft	2 LINE SEEDS/ft	3 LINE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	1.04	11.54	23.08	34.62	1005231	3.78	2.37	1.81	1.14
24	16	1.11	10.81	21.62	32.43	941838	4.04	2.52	1.94	1.21
24	17	1.18	10.17	20.34	30.51	885966	4.29	2.68	2.06	1.29
24	18	1.25	9.60	19.20	28.80	836352	4.54	2.84	2.18	1.36
24	19	1.32	9.09	18.18	27.27	792000	4.79	3.00	2.30	1.44
24	20	1.39	8.63	17.27	25.90	752115	5.05	3.15	2.42	1.51
24	21	1.46	8.22	16.44	24.66	716055	5.30	3.31	2.54	1.59
24	22	1.53	7.84	15.69	23.53	683294	5.55	3.47	2.66	1.67
17	16	1.57	7.64	15.29	22.93	665885	5.70	3.56	2.74	1.71
17	17	1.67	7.19	14.37	21.56	626012	6.05	3.78	2.90	1.81
17	18	1.76	6.82	13.64	20.45	594000	6.41	4.00	3.08	1.92
17	19	1.86	6.45	12.90	19.35	562065	6.77	4.23	3.25	2.03
17	20	1.96	6.12	12.24	18.37	533388	7.12	4.45	3.42	2.14
17	21	2.06	5.83	11.65	17.48	507495	7.48	4.67	3.59	2.24
17	22	2.16	5.56	11.11	16.67	484000	7.84	4.90	3.76	2.35
13	15	1.92	6.25	12.50	18.75	544500	7.00	4.37	3.36	2.10
13	17	2.18	5.50	11.01	16.51	479560	7.92	4.95	3.80	2.38
13	18	2.31	5.19	10.39	15.58	452571	8.38	5.24	4.02	2.52
13	19	2.43	4.94	9.88	14.81	430222	8.85	5.53	4.25	2.65
13	20	2.56	4.69	9.38	14.06	408375	9.32	5.82	4.47	2.79
13	21	2.69	4.46	8.92	13.38	388639	9.78	6.11	4.69	2.93
13	22	2.82	4.26	8.51	12.77	370723	10.20	6.40	4.90	3.07
11	15	2.27	5.29	10.57	15.86	460546	8.26	5.16	3.96	2.48
11	18	2.73	4.40	8.79	13.19	382945	9.91	6.19	4.76	2.97
11	19	2.88	4.17	8.33	12.50	363000	10.50	6.54	5.04	3.14
11	20	3.03	3.96	7.92	11.88	345030	11.00	6.99	5.28	3.36
11	21	3.18	3.77	7.55	11.32	328755	11.50	7.22	5.52	3.47
11	22	3.33	3.60	7.21	10.81	313946	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/24T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
 LINES ON A BED

72 inches
 12

GEAR	GEAR	120 HOLES SEED SPACING (ins)	1 LINE SEEDS/ft	2 LINE SEEDS/ft	3 LINE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	0.50	24.00	48.00	72.00	2090880	3.78	2.37	1.81	1.14
24	16	0.53	22.64	45.28	67.92	1972528	4.04	2.52	1.94	1.21
24	17	0.57	21.05	42.11	63.16	1834105	4.29	2.68	2.06	1.29
24	18	0.60	20.00	40.00	60.00	1742400	4.54	2.84	2.18	1.36
24	19	0.63	19.05	38.10	57.14	1659429	4.79	3.00	2.30	1.44
24	20	0.67	17.91	35.82	53.73	1560358	5.05	3.15	2.42	1.51
24	21	0.70	17.14	34.29	51.43	1493486	5.30	3.31	2.54	1.59
24	22	0.73	16.44	32.88	49.32	1432110	5.55	3.47	2.66	1.67
17	16	0.75	16.00	32.00	48.00	1393920	5.70	3.56	2.74	1.71
17	17	0.80	15.00	30.00	45.00	1306800	6.05	3.78	2.90	1.81
17	18	0.85	14.12	28.24	42.35	1229929	6.41	4.00	3.08	1.92
17	19	0.89	13.48	26.97	40.45	1174652	6.77	4.23	3.25	2.03
17	20	0.94	12.77	25.53	38.30	1112170	7.12	4.45	3.42	2.14
17	21	0.98	12.24	24.49	36.73	1066776	7.48	4.67	3.59	2.24
17	22	1.03	11.65	23.30	34.95	1014990	7.84	4.90	3.76	2.35
13	15	0.92	13.04	26.09	39.13	1136348	7.00	4.37	3.36	2.10
13	17	1.05	11.43	22.86	34.29	995657	7.92	4.95	3.80	2.38
13	18	1.11	10.81	21.62	32.43	941838	8.38	5.24	4.02	2.52
13	19	1.17	10.26	20.51	30.77	893538	8.85	5.53	4.25	2.65
13	20	1.23	9.76	19.51	29.27	849951	9.32	5.82	4.47	2.79
13	21	1.29	9.30	18.60	27.91	810419	9.78	6.11	4.69	2.93
13	22	1.35	8.89	17.78	26.67	774400	10.20	6.40	4.90	3.07
11	15	1.09	11.01	22.02	33.03	959119	8.26	5.16	3.96	2.48
11	18	1.31	9.16	18.32	27.48	798046	9.91	6.19	4.76	2.97
11	19	1.38	8.70	17.39	26.09	757565	10.50	6.54	5.04	3.14
11	20	1.45	8.28	16.55	24.83	720993	11.00	6.99	5.28	3.36
11	21	1.53	7.84	15.69	23.53	683294	11.50	7.22	5.52	3.47
11	22	1.60	7.50	15.00	22.50	653400	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/40T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

72 inches
12

GEAR	GEAR	120 HOLES SEED SPACING (ins)	1 LINE SEEDS/ft	2 LINE SEEDS/ft	3 LINE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	0.83	14.46	28.92	43.37	1259566	3.78	2.37	1.81	1.14
24	16	0.89	13.48	26.97	40.45	1174652	4.04	2.52	1.94	1.21
24	17	0.94	12.77	25.53	38.30	1112170	4.29	2.68	2.06	1.29
24	18	1.00	12.00	24.00	36.00	1045440	4.54	2.84	2.18	1.36
24	19	1.06	11.32	22.64	33.96	986264	4.79	3.00	2.30	1.44
24	20	1.11	10.81	21.62	32.43	941838	5.05	3.15	2.42	1.51
24	21	1.17	10.26	20.51	30.77	893538	5.30	3.31	2.54	1.59
24	22	1.22	9.84	19.67	29.51	856918	5.55	3.47	2.66	1.67
17	16	1.25	9.60	19.20	28.80	836352	5.70	3.56	2.74	1.71
17	17	1.33	9.02	18.05	27.07	786045	6.05	3.78	2.90	1.81
17	18	1.41	8.51	17.02	25.53	741447	6.41	4.00	3.08	1.92
17	19	1.49	8.05	16.11	24.16	701638	6.77	4.23	3.25	2.03
17	20	1.57	7.64	15.29	22.93	665885	7.12	4.45	3.42	2.14
17	21	1.65	7.27	14.55	21.82	633600	7.48	4.67	3.59	2.24
17	22	1.72	6.98	13.95	20.93	607814	7.84	4.90	3.76	2.35
13	15	1.54	7.79	15.58	23.38	678857	7.00	4.37	3.36	2.10
13	17	1.74	6.90	13.79	20.69	600828	7.92	4.95	3.80	2.38
13	18	1.85	6.49	12.97	19.46	565103	8.38	5.24	4.02	2.52
13	19	1.95	6.15	12.31	18.46	536123	8.85	5.53	4.25	2.65
13	20	2.05	5.85	11.71	17.56	509971	9.32	5.82	4.47	2.79
13	21	2.15	5.58	11.16	16.74	486251	9.78	6.11	4.69	2.93
13	22	2.26	5.31	10.62	15.93	462594	10.20	6.40	4.90	3.07
11	15	1.82	6.59	13.19	19.78	574418	8.26	5.16	3.96	2.48
11	18	2.18	5.50	11.01	16.51	479560	9.91	6.19	4.76	2.97
11	19	2.30	5.22	10.43	15.65	454539	10.50	6.54	5.04	3.14
11	20	2.42	4.96	9.92	14.88	432000	11.00	6.99	5.28	3.36
11	21	2.54	4.72	9.45	14.17	411591	11.50	7.22	5.52	3.47
11	22	2.67	4.49	8.99	13.48	391551	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/24T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK 72 inches

LINES ON A BED 12

GEAR	GEAR	144 HOLES SEED SPACING (ins)	1 LINE SEEDS/ft	2 LINE SEEDS/ft	3 LINE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	0.42	28.57	57.14	85.71	2489143	3.78	2.37	1.81	1.14
24	16	0.44	27.27	54.55	81.82	2376000	4.04	2.52	1.94	1.21
24	17	0.47	25.53	51.06	76.60	2224340	4.29	2.68	2.06	1.29
24	18	0.50	24.00	48.00	72.00	2090880	4.54	2.84	2.18	1.36
24	19	0.53	22.64	45.28	67.92	1972528	4.79	3.00	2.30	1.44
24	20	0.56	21.43	42.86	64.29	1866857	5.05	3.15	2.42	1.51
24	21	0.58	20.69	41.38	62.07	1802483	5.30	3.31	2.54	1.59
24	22	0.61	19.67	39.34	59.02	1713836	5.55	3.47	2.66	1.67
17	16	0.63	19.05	38.10	57.14	1659429	5.70	3.56	2.74	1.71
17	17	0.67	17.91	35.82	53.73	1560358	6.05	3.78	2.90	1.81
17	18	0.71	16.90	33.80	50.70	1472451	6.41	4.00	3.08	1.92
17	19	0.74	16.22	32.43	48.65	1412757	6.77	4.23	3.25	2.03
17	20	0.78	15.38	30.77	46.15	1340308	7.12	4.45	3.42	2.14
17	21	0.82	14.63	29.27	43.90	1274927	7.48	4.67	3.59	2.24
17	22	0.86	13.95	27.91	41.86	1215628	7.84	4.90	3.76	2.35
13	15	0.77	15.58	31.17	46.75	1357714	7.00	4.37	3.36	2.10
13	17	0.87	13.79	27.59	41.38	1201655	7.92	4.95	3.80	2.38
13	18	0.92	13.04	26.09	39.13	1136348	8.38	5.24	4.02	2.52
13	19	0.97	12.37	24.74	37.11	1077773	8.85	5.53	4.25	2.65
13	20	1.03	11.65	23.30	34.95	1014990	9.32	5.82	4.47	2.79
13	21	1.08	11.11	22.22	33.33	968000	9.78	6.11	4.69	2.93
13	22	1.13	10.62	21.24	31.86	925168	10.20	6.40	4.90	3.07
11	15	0.91	13.19	26.37	39.56	1148835	8.26	5.16	3.96	2.48
11	18	1.09	11.01	22.02	33.03	959119	9.91	6.19	4.76	2.97
11	19	1.15	10.43	20.87	31.30	909078	10.50	6.54	5.04	3.14
11	20	1.21	9.92	19.83	29.75	864000	11.00	6.99	5.28	3.36
11	21	1.27	9.45	18.90	28.35	823181	11.50	7.22	5.52	3.47
11	22	1.33	9.02	18.05	27.07	786045	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/40T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

72 inches
12

GEAR	GEAR	144 HOLES SEED SPACING (ins)	1 LINE SEEDS/ft	2 LINE SEEDS/ft	3 LINE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	0.69	17.39	34.78	52.17	1515130	3.78	2.37	1.81	1.14
24	16	0.74	16.22	32.43	48.65	1412757	4.04	2.52	1.94	1.21
24	17	0.79	15.19	30.38	45.57	1323342	4.29	2.68	2.06	1.29
24	18	0.83	14.46	28.92	43.37	1259566	4.54	2.84	2.18	1.36
24	19	0.88	13.64	27.27	40.91	1188000	4.79	3.00	2.30	1.44
24	20	0.93	12.90	25.81	38.71	1124129	5.05	3.15	2.42	1.51
24	21	0.97	12.37	24.74	37.11	1077773	5.30	3.31	2.54	1.59
24	22	1.02	11.76	23.53	35.29	1024941	5.55	3.47	2.66	1.67
17	16	1.05	11.43	22.86	34.29	995657	5.70	3.56	2.74	1.71
17	17	1.11	10.81	21.62	32.43	941838	6.05	3.78	2.90	1.81
17	18	1.18	10.17	20.34	30.51	885966	6.41	4.00	3.08	1.92
17	19	1.24	9.68	19.35	29.03	843097	6.77	4.23	3.25	2.03
17	20	1.31	9.16	18.32	27.48	798046	7.12	4.45	3.42	2.14
17	21	1.37	8.76	17.52	26.28	763095	7.48	4.67	3.59	2.24
17	22	1.44	8.33	16.67	25.00	726000	7.84	4.90	3.76	2.35
13	15	1.28	9.38	18.75	28.13	816750	7.00	4.37	3.36	2.10
13	17	1.45	8.28	16.55	24.83	720993	7.92	4.95	3.80	2.38
13	18	1.54	7.79	15.58	23.38	678857	8.38	5.24	4.02	2.52
13	19	1.62	7.41	14.81	22.22	645333	8.85	5.53	4.25	2.65
13	20	1.71	7.02	14.04	21.05	611368	9.32	5.82	4.47	2.79
13	21	1.79	6.70	13.41	20.11	584045	9.78	6.11	4.69	2.93
13	22	1.88	6.38	12.77	19.15	556085	10.20	6.40	4.90	3.07
11	15	1.51	7.95	15.89	23.84	692344	8.26	5.16	3.96	2.48
11	18	1.82	6.59	13.19	19.78	574418	9.91	6.19	4.76	2.97
11	19	1.92	6.25	12.50	18.75	544500	10.50	6.54	5.04	3.14
11	20	2.02	5.94	11.88	17.82	517545	11.00	6.99	5.28	3.36
11	21	2.12	5.66	11.32	16.98	493132	11.50	7.22	5.52	3.47
11	22	2.22	5.41	10.81	16.22	470919	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T,24T 96/96/72 PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

72 inches
12

GEAR	GEAR	96/96/72 HOLES SEEDS/ft	AVERAGE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
					max kph	max mph	max kph	max mph
24	15	53.20	17.73	1544928	2.27	1.42	1.09	0.68
24	16	49.30	16.43	1431672	2.42	1.51	1.16	0.72
24	17	47.10	15.70	1367784	2.57	1.61	1.23	0.77
24	18	44.00	14.67	1277760	2.72	1.70	1.31	0.82
24	19	41.80	13.93	1213872	2.88	1.80	1.38	0.86
24	20	39.80	13.27	1155792	3.03	1.89	1.45	0.91
24	21	37.90	12.63	1100616	3.18	2.00	1.53	0.96
24	22	35.90	11.97	1042536	3.33	2.08	1.60	1.00
17	16	35.10	11.70	1019304	3.42	2.14	1.64	1.03
17	17	33.00	11.00	958320	3.63	2.27	1.74	1.09
17	18	31.10	10.37	903144	3.85	2.40	1.85	1.15
17	19	29.50	9.83	856680	4.06	2.54	1.95	1.22
17	20	28.00	9.33	813120	4.27	2.67	2.05	1.28
17	21	26.80	8.93	778272	4.50	2.80	2.16	1.34
17	22	25.60	8.53	743424	4.70	2.94	2.26	1.41
13	15	28.70	9.57	833448	4.19	2.62	2.01	1.26
13	17	25.20	8.40	731808	4.75	2.97	2.28	1.43
13	18	23.90	7.97	694056	5.03	3.14	2.41	1.51
13	19	22.60	7.53	656304	5.31	3.32	2.55	1.59
13	20	21.40	7.13	621456	5.59	3.49	2.68	1.68
13	21	20.50	6.83	595320	5.87	3.67	2.82	1.76
13	22	19.50	6.50	566280	6.15	3.84	2.95	1.84
11	15	24.30	8.10	705672	4.96	3.10	2.38	1.49
11	18	20.10	6.70	583704	5.95	3.72	2.86	1.79
11	19	19.10	6.37	554664	6.28	3.92	3.01	1.88
11	20	18.10	6.03	525624	6.61	4.13	3.17	1.98
11	21	17.30	5.77	502392	6.94	4.33	3.33	2.08
11	22	16.50	5.50	479160	7.27	4.54	3.49	2.18

APPLICATION RATES FOR STAR 19T,40T 96/96/72 PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

72 inches

12

GEAR	GEAR	96/96/72 HOLES SEEDS/ft	AVERAGE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
					max kph	max mph	max kph	max mph
24	15	31.70	10.57	920568	2.27	1.42	1.09	0.68
24	16	29.70	9.90	862488	2.42	1.51	1.16	0.72
24	17	28.00	9.33	813120	2.57	1.61	1.23	0.77
24	18	26.40	8.80	766656	2.72	1.70	1.31	0.82
24	19	25.00	8.33	726000	2.88	1.80	1.38	0.86
24	20	23.70	7.90	688248	3.03	1.89	1.45	0.91
24	21	22.60	7.53	656304	3.18	2.00	1.53	0.96
24	22	21.60	7.20	627264	3.33	2.08	1.60	1.00
17	16	21.00	7.00	609840	3.42	2.14	1.64	1.03
17	17	19.80	6.60	574992	3.63	2.27	1.74	1.09
17	18	18.80	6.27	545952	3.85	2.40	1.85	1.15
17	19	17.70	5.90	514008	4.06	2.54	1.95	1.22
17	20	16.80	5.60	487872	4.27	2.67	2.05	1.28
17	21	16.00	5.33	464640	4.50	2.80	2.16	1.34
17	22	15.30	5.10	444312	4.70	2.94	2.26	1.41
13	15	17.20	5.73	499488	4.19	2.62	2.01	1.26
13	17	15.10	5.03	438504	4.75	2.97	2.28	1.43
13	18	14.30	4.77	415272	5.03	3.14	2.41	1.51
13	19	13.60	4.53	394944	5.31	3.32	2.55	1.59
13	20	12.90	4.30	374616	5.59	3.49	2.68	1.68
13	21	12.30	4.10	357192	5.87	3.67	2.82	1.76
13	22	11.70	3.90	339768	6.15	3.84	2.95	1.84
11	15	14.50	4.83	421080	4.96	3.10	2.38	1.49
11	18	12.10	4.08	351384	5.95	3.72	2.86	1.79
11	19	11.50	3.83	333960	6.28	3.92	3.01	1.88
11	20	10.90	3.63	316536	6.61	4.13	3.17	1.98
11	21	10.40	3.47	302016	6.94	4.33	3.33	2.08
11	22	9.90	3.30	287496	7.27	4.54	3.49	2.18

APPLICATION RATES FOR STAR 19T, 24T 144/144/108 PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK 72 inches
 LINES ON A BED 12

GEAR	GEAR	144/144/108 SEEDS/ft	AVERAGE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
					max kph	max mph	max kph	max mph
24	15	78.60	26.20	2282544	2.27	1.42	1.09	0.68
24	16	75.00	25.00	2178000	2.42	1.51	1.16	0.72
24	17	70.20	23.40	2038608	2.57	1.61	1.23	0.77
24	18	66.00	22.00	1916640	2.72	1.70	1.31	0.82
24	19	62.30	20.77	1809192	2.88	1.80	1.38	0.86
24	20	58.90	19.63	1710456	3.03	1.89	1.45	0.91
24	21	56.90	18.97	1652376	3.18	2.00	1.53	0.96
24	22	54.10	18.03	1571064	3.33	2.08	1.60	1.00
17	16	52.40	17.47	1521696	3.42	2.14	1.64	1.03
17	17	49.30	16.43	1431672	3.63	2.27	1.74	1.09
17	18	46.50	15.50	1350360	3.85	2.40	1.85	1.15
17	19	44.60	14.87	1295184	4.06	2.54	1.95	1.22
17	20	42.30	14.10	1228392	4.27	2.67	2.05	1.28
17	21	40.20	13.40	1167408	4.50	2.80	2.16	1.34
17	22	38.40	12.80	1115136	4.70	2.94	2.26	1.41
13	15	42.90	14.30	1245816	4.19	2.62	2.01	1.26
13	17	37.90	12.63	1100616	4.75	2.97	2.28	1.43
13	18	35.90	11.97	1042536	5.03	3.14	2.41	1.51
13	19	34.00	11.33	987360	5.31	3.32	2.55	1.59
13	20	32.00	10.67	929280	5.59	3.49	2.68	1.68
13	21	30.60	10.20	888624	5.87	3.67	2.82	1.76
13	22	29.20	9.73	847968	6.15	3.84	2.95	1.84
11	15	36.30	12.10	1054152	4.96	3.10	2.38	1.49
11	18	30.30	10.10	879912	5.95	3.72	2.86	1.79
11	19	28.70	9.57	833448	6.28	3.92	3.01	1.88
11	20	27.30	9.10	792792	6.61	4.13	3.17	1.98
11	21	26.00	8.67	755040	6.94	4.33	3.33	2.08
11	22	24.80	8.27	720192	7.27	4.54	3.49	2.18

APPLICATION RATES FOR STAR 19T, 40T 144/144/108 PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

72 inches
12

GEAR	GEAR	144/144/108 SEEDS/ft	AVERAGE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
					max kph	max mph	max kph	max mph
24	15	47.80	15.93	1388112	2.27	1.42	1.09	0.68
24	16	44.60	14.87	1295184	2.42	1.51	1.16	0.72
24	17	41.80	13.93	1213872	2.57	1.61	1.23	0.77
24	18	39.80	13.27	1155792	2.72	1.70	1.31	0.82
24	19	37.50	12.50	1089000	2.88	1.80	1.38	0.86
24	20	35.50	11.83	1030920	3.03	1.89	1.45	0.91
24	21	34.00	11.33	987360	3.18	2.00	1.53	0.96
24	22	32.40	10.80	940896	3.33	2.08	1.60	1.00
17	16	31.40	10.47	911856	3.42	2.14	1.64	1.03
17	17	29.70	9.90	862488	3.63	2.27	1.74	1.09
17	18	28.00	9.33	813120	3.85	2.40	1.85	1.15
17	19	26.60	8.87	772464	4.06	2.54	1.95	1.22
17	20	25.20	8.40	731808	4.27	2.67	2.05	1.28
17	21	24.10	8.03	699864	4.50	2.80	2.16	1.34
17	22	22.90	7.63	665016	4.70	2.94	2.26	1.41
13	15	25.80	8.60	749232	4.19	2.62	2.01	1.26
13	17	22.80	7.60	662112	4.75	2.97	2.28	1.43
13	18	21.40	7.13	621456	5.03	3.14	2.41	1.51
13	19	20.40	6.80	592416	5.31	3.32	2.55	1.59
13	20	19.30	6.43	560472	5.59	3.49	2.68	1.68
13	21	18.40	6.13	534336	5.87	3.67	2.82	1.76
13	22	17.60	5.87	511104	6.15	3.84	2.95	1.84
11	15	21.90	7.30	635976	4.96	3.10	2.38	1.49
11	18	18.10	6.03	525624	5.95	3.72	2.86	1.79
11	19	17.20	5.73	499488	6.28	3.92	3.01	1.88
11	20	16.30	5.43	473352	6.61	4.13	3.17	1.98
11	21	15.60	5.20	453024	6.94	4.33	3.33	2.08
11	22	14.90	4.97	432696	7.27	4.54	3.49	2.18

APPLICATION RATES - WHEEL TRACK 80" LINES 12

APPLICATION RATES FOR STAR 19T/40T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

80 inches
12

GEAR	GEAR	12 HOLES SEED SPACING (ins)	1 LINE SEEDS/ft	2 LINE SEEDS/ft	3 LINE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	8.33	1.44	2.88	4.32	112953	3.78	2.37	1.81	1.14
24	16	8.89	1.35	2.70	4.05	105838	4.04	2.52	1.94	1.21
24	17	9.44	1.27	2.54	3.81	99671	4.29	2.68	2.06	1.29
24	18	10.00	1.20	2.40	3.60	94090	4.54	2.84	2.18	1.36
24	19	10.60	1.13	2.26	3.40	88764	4.79	3.00	2.30	1.44
24	20	11.10	1.08	2.16	3.24	84765	5.05	3.15	2.42	1.51
24	21	11.70	1.03	2.05	3.08	80418	5.30	3.31	2.54	1.59
24	22	12.20	0.98	1.97	2.95	77123	5.55	3.47	2.66	1.67
17	16	12.50	0.96	1.92	2.88	75272	5.70	3.56	2.74	1.71
17	17	13.30	0.90	1.80	2.71	70744	6.05	3.78	2.90	1.81
17	18	14.10	0.85	1.70	2.55	66730	6.41	4.00	3.08	1.92
17	19	14.90	0.81	1.61	2.42	63147	6.77	4.23	3.25	2.03
17	20	15.70	0.76	1.53	2.29	59930	7.12	4.45	3.42	2.14
17	21	16.50	0.73	1.45	2.18	57024	7.48	4.67	3.59	2.24
17	22	17.20	0.70	1.40	2.09	54703	7.84	4.90	3.76	2.35
13	15	15.40	0.78	1.56	2.34	61097	7.00	4.37	3.36	2.10
13	17	17.40	0.69	1.38	2.07	54074	7.92	4.95	3.80	2.38
13	18	18.50	0.65	1.30	1.95	50859	8.38	5.24	4.02	2.52
13	19	19.50	0.62	1.23	1.85	48251	8.85	5.53	4.25	2.65
13	20	20.50	0.59	1.17	1.76	45897	9.32	5.82	4.47	2.79
13	21	21.50	0.56	1.12	1.67	43763	9.78	6.11	4.69	2.93
13	22	22.60	0.53	1.06	1.59	41633	10.20	6.40	4.90	3.07
11	15	18.20	0.66	1.32	1.98	51698	8.26	5.16	3.96	2.48
11	18	21.80	0.55	1.10	1.65	43160	9.91	6.19	4.76	2.97
11	19	23.00	0.52	1.04	1.57	40909	10.50	6.54	5.04	3.14
11	20	24.20	0.50	0.99	1.49	38880	11.00	6.99	5.28	3.36
11	21	25.40	0.47	0.94	1.42	37043	11.50	7.22	5.52	3.47
11	22	26.70	0.45	0.90	1.35	35240	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/24T PRIMARY DRIVE BED DRILL

80 inches

12

TRACTOR WHEEL TRACK
LINES ON A BED

GEAR	GEAR	24 HOLES SEED SPACING (ins)	1 LINE SEEDS/ft	2 LINE SEEDS/ft	3 LINE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	2.50	4.80	9.60	14.40	376358	3.78	2.37	1.81	1.14
24	16	2.67	4.49	8.99	13.48	352396	4.04	2.52	1.94	1.21
24	17	2.83	4.24	8.48	12.72	332472	4.29	2.68	2.06	1.29
24	18	3.00	4.00	8.00	12.00	313632	4.54	2.84	2.18	1.36
24	19	3.17	3.79	7.57	11.36	296813	4.79	3.00	2.30	1.44
24	20	3.33	3.60	7.21	10.81	282551	5.05	3.15	2.42	1.51
24	21	3.50	3.43	6.86	10.29	268827	5.30	3.31	2.54	1.59
24	22	3.66	3.28	6.56	9.84	257075	5.55	3.47	2.66	1.67
17	16	3.76	3.19	6.38	9.57	250238	5.70	3.56	2.74	1.71
17	17	4.00	3.00	6.00	9.00	235224	6.05	3.78	2.90	1.81
17	18	4.23	2.84	5.67	8.51	222434	6.41	4.00	3.08	1.92
17	19	4.47	2.68	5.37	8.05	210491	6.77	4.23	3.25	2.03
17	20	4.70	2.55	5.11	7.66	200191	7.12	4.45	3.42	2.14
17	21	4.94	2.43	4.86	7.29	190465	7.48	4.67	3.59	2.24
17	22	5.17	2.32	4.64	6.96	181991	7.84	4.90	3.76	2.35
13	15	4.61	2.60	5.21	7.81	204099	7.00	4.37	3.36	2.10
13	17	5.23	2.29	4.59	6.88	179904	7.92	4.95	3.80	2.38
13	18	5.54	2.17	4.33	6.50	169837	8.38	5.24	4.02	2.52
13	19	5.84	2.05	4.11	6.16	161112	8.85	5.53	4.25	2.65
13	20	6.15	1.95	3.90	5.85	152991	9.32	5.82	4.47	2.79
13	21	6.46	1.86	3.72	5.57	145650	9.78	6.11	4.69	2.93
13	22	6.77	1.77	3.55	5.32	138980	10.20	6.40	4.90	3.07
11	15	5.45	2.20	4.40	6.61	172641	8.26	5.16	3.96	2.48
11	18	6.54	1.83	3.67	5.50	143868	9.91	6.19	4.76	2.97
11	19	6.91	1.74	3.47	5.21	136164	10.50	6.54	5.04	3.14
11	20	7.27	1.65	3.30	4.95	129422	11.00	6.99	5.28	3.36
11	21	7.63	1.57	3.15	4.72	123315	11.50	7.22	5.52	3.47
11	22	8.00	1.50	3.00	4.50	117612	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/40T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK 80 inches
 LINES ON A BED 12

GEAR	GEAR	24 HOLES SEED SPACING (ins)	1 LINE SEEDS/ft	2 LINE SEEDS/ft	3 LINE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	4.16	2.88	5.77	8.65	226177	3.78	2.37	1.81	1.14
24	16	4.44	2.70	5.41	8.11	211914	4.04	2.52	1.94	1.21
24	17	4.72	2.54	5.08	7.63	199342	4.29	2.68	2.06	1.29
24	18	5.00	2.40	4.80	7.20	188179	4.54	2.84	2.18	1.36
24	19	5.28	2.27	4.55	6.82	178200	4.79	3.00	2.30	1.44
24	20	5.55	2.16	4.32	6.49	169531	5.05	3.15	2.42	1.51
24	21	5.83	2.06	4.12	6.17	161389	5.30	3.31	2.54	1.59
24	22	6.11	1.96	3.93	5.89	153993	5.55	3.47	2.66	1.67
17	16	6.27	1.91	3.83	5.74	150063	5.70	3.56	2.74	1.71
17	17	6.66	1.80	3.60	5.41	141276	6.05	3.78	2.90	1.81
17	18	7.06	1.70	3.40	5.10	133271	6.41	4.00	3.08	1.92
17	19	7.45	1.61	3.22	4.83	126295	6.77	4.23	3.25	2.03
17	20	7.84	1.53	3.06	4.59	120012	7.12	4.45	3.42	2.14
17	21	8.23	1.46	2.92	4.37	114325	7.48	4.67	3.59	2.24
17	22	8.62	1.39	2.78	4.18	109153	7.84	4.90	3.76	2.35
13	15	7.69	1.56	3.12	4.68	122353	7.00	4.37	3.36	2.10
13	17	8.71	1.38	2.76	4.13	108025	7.92	4.95	3.80	2.38
13	18	9.23	1.30	2.60	3.90	101939	8.38	5.24	4.02	2.52
13	19	9.74	1.23	2.46	3.70	96601	8.85	5.53	4.25	2.65
13	20	10.30	1.17	2.33	3.50	91349	9.32	5.82	4.47	2.79
13	21	10.80	1.11	2.22	3.33	87120	9.78	6.11	4.69	2.93
13	22	11.30	1.06	2.12	3.19	83265	10.20	6.40	4.90	3.07
11	15	9.09	1.32	2.64	3.96	103509	8.26	5.16	3.96	2.48
11	18	10.90	1.10	2.20	3.30	86321	9.91	6.19	4.76	2.97
11	19	11.50	1.04	2.09	3.13	81817	10.50	6.54	5.04	3.14
11	20	12.10	0.99	1.98	2.98	77760	11.00	6.99	5.28	3.36
11	21	12.70	0.94	1.89	2.83	74086	11.50	7.22	5.52	3.47
11	22	13.30	0.90	1.80	2.71	70744	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/24T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK 80 inches
LINES ON A BED 12

GEAR	GEAR	48 HOLES SEED SPACING (ins.)	1 LINE SEEDS/ft	2 LINE SEEDS/ft	3 LINE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	1.25	9.60	19.20	28.80	752717	3.78	2.37	1.81	1.14
24	16	1.33	9.02	18.05	27.07	707441	4.04	2.52	1.94	1.21
24	17	1.42	8.45	16.90	25.35	662603	4.29	2.68	2.06	1.29
24	18	1.50	8.00	16.00	24.00	627264	4.54	2.84	2.18	1.36
24	19	1.58	7.59	15.19	22.78	595504	4.79	3.00	2.30	1.44
24	20	1.67	7.19	14.37	21.56	563411	5.05	3.15	2.42	1.51
24	21	1.75	6.86	13.71	20.57	537655	5.30	3.31	2.54	1.59
24	22	1.83	6.56	13.11	19.67	514151	5.55	3.47	2.66	1.67
17	16	1.88	6.38	12.77	19.15	500477	5.70	3.56	2.74	1.71
17	17	2.00	6.00	12.00	18.00	470448	6.05	3.78	2.90	1.81
17	18	2.12	5.66	11.32	16.98	443819	6.41	4.00	3.08	1.92
17	19	2.23	5.38	10.76	16.14	421926	6.77	4.23	3.25	2.03
17	20	2.35	5.11	10.21	15.32	400381	7.12	4.45	3.42	2.14
17	21	2.47	4.86	9.72	14.57	380930	7.48	4.67	3.59	2.24
17	22	2.59	4.63	9.27	13.90	363280	7.84	4.90	3.76	2.35
13	15	2.31	5.19	10.39	15.58	407314	7.00	4.37	3.36	2.10
13	17	2.61	4.60	9.20	13.79	360497	7.92	4.95	3.80	2.38
13	18	2.77	4.33	8.66	13.00	339674	8.38	5.24	4.02	2.52
13	19	2.92	4.11	8.22	12.33	322225	8.85	5.53	4.25	2.65
13	20	3.08	3.90	7.79	11.69	305486	9.32	5.82	4.47	2.79
13	21	3.23	3.72	7.43	11.15	291299	9.78	6.11	4.69	2.93
13	22	3.38	3.55	7.10	10.65	278372	10.20	6.40	4.90	3.07
11	15	2.73	4.40	8.79	13.19	344651	8.26	5.16	3.96	2.48
11	18	3.27	3.67	7.34	11.01	287736	9.91	6.19	4.76	2.97
11	19	3.45	3.48	6.96	10.43	272723	10.50	6.54	5.04	3.14
11	20	3.63	3.31	6.61	9.92	259200	11.00	6.99	5.28	3.36
11	21	3.82	3.14	6.28	9.42	246308	11.50	7.22	5.52	3.47
11	22	4.00	3.00	6.00	9.00	235224	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/40T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
 LINES ON A BED

80. inches

12

GEAR	GEAR	48 HOLES SEED SPACING (ins)	1 LINE SEEDS/ft	2 LINE SEEDS/ft	3 LINE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	2.08	5.77	11.54	17.31	452354	3.78	2.37	1.81	1.14
24	16	2.22	5.41	10.81	16.22	423827	4.04	2.52	1.94	1.21
24	17	2.36	5.08	10.17	15.25	398685	4.29	2.68	2.06	1.29
24	18	2.50	4.80	9.60	14.40	376358	4.54	2.84	2.18	1.36
24	19	2.64	4.55	9.09	13.64	356400	4.79	3.00	2.30	1.44
24	20	2.78	4.32	8.63	12.95	338452	5.05	3.15	2.42	1.51
24	21	2.92	4.11	8.22	12.33	322225	5.30	3.31	2.54	1.59
24	22	3.05	3.93	7.87	11.80	308490	5.55	3.47	2.66	1.67
17	16	3.14	3.82	7.64	11.46	299648	5.70	3.56	2.74	1.71
17	17	3.33	3.60	7.21	10.81	282551	6.05	3.78	2.90	1.81
17	18	3.53	3.40	6.80	10.20	266543	6.41	4.00	3.08	1.92
17	19	3.72	3.23	6.45	9.68	252929	6.77	4.23	3.25	2.03
17	20	3.92	3.06	6.12	9.18	240024	7.12	4.45	3.42	2.14
17	21	4.12	2.91	5.83	8.74	228373	7.48	4.67	3.59	2.24
17	22	4.31	2.78	5.57	8.35	218305	7.84	4.90	3.76	2.35
13	15	3.84	3.13	6.25	9.38	245025	7.00	4.37	3.36	2.10
13	17	4.36	2.75	5.50	8.26	215802	7.92	4.95	3.80	2.38
13	18	4.61	2.60	5.21	7.81	204099	8.38	5.24	4.02	2.52
13	19	4.87	2.46	4.93	7.39	193202	8.85	5.53	4.25	2.65
13	20	5.13	2.34	4.68	7.02	183411	9.32	5.82	4.47	2.79
13	21	5.38	2.23	4.46	6.69	174888	9.78	6.11	4.69	2.93
13	22	5.64	2.13	4.26	6.38	166826	10.20	6.40	4.90	3.07
11	15	4.54	2.64	5.29	7.93	207246	8.26	5.16	3.96	2.48
11	18	5.45	2.20	4.40	6.61	172641	9.91	6.19	4.76	2.97
11	19	5.76	2.08	4.17	6.25	163350	10.50	6.54	5.04	3.14
11	20	6.06	1.98	3.96	5.94	155263	11.00	6.99	5.28	3.36
11	21	6.36	1.89	3.77	5.66	147940	11.50	7.22	5.52	3.47
11	22	6.66	1.80	3.60	5.41	141276	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/24T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK 80 inches
LINES ON A BED 12

GEAR	GEAR	72 HOLES SEED SPACING (ins)	1 LINE SEEDS/ft	2 LINE SEEDS/ft	3 LINE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	0.83	14.46	28.92	43.37	1133610	3.78	2.37	1.81	1.14
24	16	0.89	13.48	26.97	40.45	1057187	4.04	2.52	1.94	1.21
24	17	0.94	12.77	25.53	38.30	1000953	4.29	2.68	2.06	1.29
24	18	1.00	12.00	24.00	36.00	940896	4.54	2.84	2.18	1.36
24	19	1.06	11.32	22.64	33.96	887638	4.79	3.00	2.30	1.44
24	20	1.11	10.81	21.62	32.43	847654	5.05	3.15	2.42	1.51
24	21	1.67	7.19	14.37	21.56	563411	5.30	3.31	2.54	1.59
24	22	1.22	9.84	19.67	29.51	771226	5.55	3.47	2.66	1.67
17	16	1.25	9.60	19.20	28.80	752717	5.70	3.56	2.74	1.71
17	17	1.33	9.02	18.05	27.07	707441	6.05	3.78	2.90	1.81
17	18	1.41	8.51	17.02	25.53	667302	6.41	4.00	3.08	1.92
17	19	1.49	8.05	16.11	24.16	631474	6.77	4.23	3.25	2.03
17	20	1.57	7.64	15.29	22.93	599297	7.12	4.45	3.42	2.14
17	21	1.65	7.27	14.55	21.82	570240	7.48	4.67	3.59	2.24
17	22	1.72	6.98	13.95	20.93	547033	7.84	4.90	3.76	2.35
13	15	1.54	7.79	15.58	23.38	610971	7.00	4.37	3.36	2.10
13	17	1.74	6.90	13.79	20.69	540745	7.92	4.95	3.80	2.38
13	18	1.85	6.49	12.97	19.46	508592	8.38	5.24	4.02	2.52
13	19	1.95	6.15	12.31	18.46	482511	8.85	5.53	4.25	2.65
13	20	2.05	5.85	11.71	17.56	458974	9.32	5.82	4.47	2.79
13	21	2.15	5.58	11.16	16.74	437626	9.78	6.11	4.69	2.93
13	22	2.56	4.69	9.38	14.06	367538	10.20	6.40	4.90	3.07
11	15	1.82	6.59	13.19	19.78	516976	8.26	5.16	3.96	2.48
11	18	2.18	5.50	11.01	16.51	431604	9.91	6.19	4.76	2.97
11	19	2.30	5.22	10.43	15.65	409085	10.50	6.54	5.04	3.14
11	20	2.42	4.96	9.92	14.88	388800	11.00	6.99	5.28	3.36
11	21	2.54	4.72	9.45	14.17	370431	11.50	7.22	5.52	3.47
11	22	2.67	4.49	8.99	13.48	352396	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/40T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

80 inches
12

GEAR	GEAR	72 HOLES SEED SPACING (ins)	1 LINE SEEDS/ft	2 LINE SEEDS/ft	3 LINE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	1.38	8.70	17.39	26.09	681809	3.78	2.37	1.81	1.14
24	16	1.48	8.11	16.22	24.32	635741	4.04	2.52	1.94	1.21
24	17	1.57	7.64	15.29	22.93	599297	4.29	2.68	2.06	1.29
24	18	1.67	7.19	14.37	21.56	563411	4.54	2.84	2.18	1.36
24	19	1.76	6.82	13.64	20.45	534600	4.79	3.00	2.30	1.44
24	20	1.85	6.49	12.97	19.46	508592	5.05	3.15	2.42	1.51
24	21	1.94	6.19	12.37	18.56	484998	5.30	3.31	2.54	1.59
24	22	2.04	5.88	11.76	17.65	461224	5.55	3.47	2.66	1.67
17	16	2.09	5.74	11.48	17.22	450189	5.70	3.56	2.74	1.71
17	17	2.22	5.41	10.81	16.22	423827	6.05	3.78	2.90	1.81
17	18	2.35	5.11	10.21	15.32	400381	6.41	4.00	3.08	1.92
17	19	2.48	4.84	9.68	14.52	379394	6.77	4.23	3.25	2.03
17	20	2.61	4.60	9.20	13.79	360497	7.12	4.45	3.42	2.14
17	21	2.74	4.38	8.76	13.14	343393	7.48	4.67	3.59	2.24
17	22	2.87	4.18	8.36	12.54	327838	7.84	4.90	3.76	2.35
13	15	2.56	4.69	9.38	14.06	367538	7.00	4.37	3.36	2.10
13	17	2.90	4.14	8.28	12.41	324447	7.92	4.95	3.80	2.38
13	18	3.08	3.90	7.79	11.69	305486	8.38	5.24	4.02	2.52
13	19	3.25	3.69	7.38	11.08	289506	8.85	5.53	4.25	2.65
13	20	3.42	3.51	7.02	10.53	275116	9.32	5.82	4.47	2.79
13	21	3.59	3.34	6.69	10.03	262088	9.78	6.11	4.69	2.93
13	22	3.76	3.19	6.38	9.57	250238	10.20	6.40	4.90	3.07
11	15	3.03	3.96	7.92	11.88	310527	8.26	5.16	3.96	2.48
11	18	3.63	3.31	6.61	9.92	259200	9.91	6.19	4.76	2.97
11	19	3.84	3.13	6.25	9.38	245025	10.50	6.54	5.04	3.14
11	20	4.04	2.97	5.94	8.91	232895	11.00	6.99	5.28	3.36
11	21	4.24	2.83	5.66	8.49	221909	11.50	7.22	5.52	3.47
11	22	4.44	2.70	5.41	8.11	211914	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/24T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK 80 inches
LINES ON A BED 12

GEAR	GEAR	96 HOLES SEED SPACING (ins)	1 LINE SEEDS/ft	2 LINE SEEDS/ft	3 LINE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	0.62	19.35	38.71	58.06	1517574	3.78	2.37	1.81	1.14
24	16	0.67	17.91	35.82	53.73	1404322	4.04	2.52	1.94	1.21
24	17	0.70	17.14	34.29	51.43	1344137	4.29	2.68	2.06	1.29
24	18	0.75	16.00	32.00	48.00	1254528	4.54	2.84	2.18	1.36
24	19	0.79	15.19	30.38	45.57	1191008	4.79	3.00	2.30	1.44
24	20	0.83	14.46	28.92	43.37	1133610	5.05	3.15	2.42	1.51
24	21	0.87	13.79	27.59	41.38	1081490	5.30	3.31	2.54	1.59
24	22	0.92	13.04	26.09	39.13	1022713	5.55	3.47	2.66	1.67
17	16	0.94	12.77	25.53	38.30	1000953	5.70	3.56	2.74	1.71
17	17	1.00	12.00	24.00	36.00	940896	6.05	3.78	2.90	1.81
17	18	1.06	11.32	22.64	33.96	887638	6.41	4.00	3.08	1.92
17	19	1.12	10.71	21.43	32.14	840086	6.77	4.23	3.25	2.03
17	20	1.18	10.17	20.34	30.51	797369	7.12	4.45	3.42	2.14
17	21	1.23	9.76	19.51	29.27	764956	7.48	4.67	3.59	2.24
17	22	1.29	9.30	18.60	27.91	729377	7.84	4.90	3.76	2.35
13	15	1.15	10.43	20.87	31.30	818170	7.00	4.37	3.36	2.10
13	17	1.31	9.16	18.32	27.48	718241	7.92	4.95	3.80	2.38
13	18	1.38	8.70	17.39	26.09	681809	8.38	5.24	4.02	2.52
13	19	1.46	8.22	16.44	24.66	644449	8.85	5.53	4.25	2.65
13	20	1.54	7.79	15.58	23.38	610971	9.32	5.82	4.47	2.79
13	21	1.61	7.45	14.91	22.36	584407	9.78	6.11	4.69	2.93
13	22	1.69	7.10	14.20	21.30	556743	10.20	6.40	4.90	3.07
11	15	1.36	8.82	17.65	26.47	691835	8.26	5.16	3.96	2.48
11	18	1.64	7.32	14.63	21.95	573717	9.91	6.19	4.76	2.97
11	19	1.73	6.94	13.87	20.81	543871	10.50	6.54	5.04	3.14
11	20	1.82	6.59	13.19	19.78	516976	11.00	6.99	5.28	3.36
11	21	1.91	6.28	12.57	18.85	492616	11.50	7.22	5.52	3.47
11	22	2.00	6.00	12.00	18.00	470448	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/40T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK 80 inches
 LINES ON A BED 12

GEAR	GEAR	96 HOLES SEED SPACING (ins)	1 LINE SEEDS/ft	2 LINE SEEDS/ft	3 LINE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	1.04	11.54	23.08	34.62	904708	3.78	2.37	1.81	1.14
24	16	1.11	10.81	21.62	32.43	847654	4.04	2.52	1.94	1.21
24	17	1.18	10.17	20.34	30.51	797369	4.29	2.68	2.06	1.29
24	18	1.25	9.60	19.20	28.80	752717	4.54	2.84	2.18	1.36
24	19	1.32	9.09	18.18	27.27	712800	4.79	3.00	2.30	1.44
24	20	1.39	8.63	17.27	25.90	676904	5.05	3.15	2.42	1.51
24	21	1.46	8.22	16.44	24.66	644449	5.30	3.31	2.54	1.59
24	22	1.53	7.84	15.69	23.53	614965	5.55	3.47	2.66	1.67
17	16	1.57	7.64	15.29	22.93	599297	5.70	3.56	2.74	1.71
17	17	1.67	7.19	14.37	21.56	563411	6.05	3.78	2.90	1.81
17	18	1.76	6.82	13.64	20.45	534600	6.41	4.00	3.08	1.92
17	19	1.86	6.45	12.90	19.35	505858	6.77	4.23	3.25	2.03
17	20	1.96	6.12	12.24	18.37	480049	7.12	4.45	3.42	2.14
17	21	2.06	5.83	11.65	17.48	456746	7.48	4.67	3.59	2.24
17	22	2.16	5.56	11.11	16.67	435600	7.84	4.90	3.76	2.35
13	15	1.92	6.25	12.50	18.75	490050	7.00	4.37	3.36	2.10
13	17	2.18	5.50	11.01	16.51	431604	7.92	4.95	3.80	2.38
13	18	2.31	5.19	10.39	15.58	407314	8.38	5.24	4.02	2.52
13	19	2.43	4.94	9.88	14.81	387200	8.85	5.53	4.25	2.65
13	20	2.56	4.69	9.38	14.06	367538	9.32	5.82	4.47	2.79
13	21	2.69	4.46	8.92	13.38	349775	9.78	6.11	4.69	2.93
13	22	2.82	4.26	8.51	12.77	333651	10.20	6.40	4.90	3.07
11	15	2.27	5.29	10.57	15.86	414492	8.26	5.16	3.96	2.48
11	18	2.73	4.40	8.79	13.19	344651	9.91	6.19	4.76	2.97
11	19	2.88	4.17	8.33	12.50	326700	10.50	6.54	5.04	3.14
11	20	3.03	3.96	7.92	11.88	310527	11.00	6.99	5.28	3.36
11	21	3.18	3.77	7.55	11.32	295879	11.50	7.22	5.52	3.47
11	22	3.33	3.60	7.21	10.81	282551	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/24T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

80 inches
12

GEAR	GEAR	120 HOLES SEED SPACING (ins)	1 LINE SEEDS/ft	2 LINE SEEDS/ft	3 LINE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	0.50	24.00	48.00	72.00	1881792	3.78	2.37	1.81	1.14
24	16	0.53	22.64	45.28	67.92	1775275	4.04	2.52	1.94	1.21
24	17	0.57	21.05	42.11	63.16	1650695	4.29	2.68	2.06	1.29
24	18	0.60	20.00	40.00	60.00	1568160	4.54	2.84	2.18	1.36
24	19	0.63	19.05	38.10	57.14	1493486	4.79	3.00	2.30	1.44
24	20	0.67	17.91	35.82	53.73	1404322	5.05	3.15	2.42	1.51
24	21	0.70	17.14	34.29	51.43	1344137	5.30	3.31	2.54	1.59
24	22	0.73	16.44	32.88	49.32	1288899	5.55	3.47	2.66	1.67
17	16	0.75	16.00	32.00	48.00	1254528	5.70	3.56	2.74	1.71
17	17	0.80	15.00	30.00	45.00	1176120	6.05	3.78	2.90	1.81
17	18	0.85	14.12	28.24	42.35	1106936	6.41	4.00	3.08	1.92
17	19	0.89	13.48	26.97	40.45	1057187	6.77	4.23	3.25	2.03
17	20	0.94	12.77	25.53	38.30	1000953	7.12	4.45	3.42	2.14
17	21	0.98	12.24	24.49	36.73	960098	7.48	4.67	3.59	2.24
17	22	1.03	11.65	23.30	34.95	913491	7.84	4.90	3.76	2.35
13	15	0.92	13.04	26.09	39.13	1022713	7.00	4.37	3.36	2.10
13	17	1.05	11.43	22.86	34.29	896091	7.92	4.95	3.80	2.38
13	18	1.11	10.81	21.62	32.43	847654	8.38	5.24	4.02	2.52
13	19	1.17	10.26	20.51	30.77	804185	8.85	5.53	4.25	2.65
13	20	1.23	9.76	19.51	29.27	764956	9.32	5.82	4.47	2.79
13	21	1.29	9.30	18.60	27.91	729377	9.78	6.11	4.69	2.93
13	22	1.35	8.89	17.78	26.67	696960	10.20	6.40	4.90	3.07
11	15	1.09	11.01	22.02	33.03	863207	8.26	5.16	3.96	2.48
11	18	1.31	9.16	18.32	27.48	718241	9.91	6.19	4.76	2.97
11	19	1.38	8.70	17.39	26.09	681809	10.50	6.54	5.04	3.14
11	20	1.45	8.28	16.55	24.83	648894	11.00	6.99	5.28	3.36
11	21	1.53	7.84	15.69	23.53	614965	11.50	7.22	5.52	3.47
11	22	1.60	7.50	15.00	22.50	588060	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/40T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

80 inches
12

GEAR	GEAR	120 HOLES SEED SPACING (ins)	1 LINE SEEDS/ft	2 LINE SEEDS/ft	3 LINE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	0.83	14.46	28.92	43.37	1133610	3.78	2.37	1.81	1.14
24	16	0.89	13.48	26.97	40.45	1057187	4.04	2.52	1.94	1.21
24	17	0.94	12.77	25.53	38.30	1000953	4.29	2.68	2.06	1.29
24	18	1.00	12.00	24.00	36.00	940896	4.54	2.84	2.18	1.36
24	19	1.06	11.32	22.64	33.96	887638	4.79	3.00	2.30	1.44
24	20	1.11	10.81	21.62	32.43	847654	5.05	3.15	2.42	1.51
24	21	1.17	10.26	20.51	30.77	804185	5.30	3.31	2.54	1.59
24	22	1.22	9.84	19.67	29.51	771226	5.55	3.47	2.66	1.67
17	16	1.25	9.60	19.20	28.80	752717	5.70	3.56	2.74	1.71
17	17	1.33	9.02	18.05	27.07	707441	6.05	3.78	2.90	1.81
17	18	1.41	8.51	17.02	25.53	667302	6.41	4.00	3.08	1.92
17	19	1.49	8.05	16.11	24.16	631474	6.77	4.23	3.25	2.03
17	20	1.57	7.64	15.29	22.93	599297	7.12	4.45	3.42	2.14
17	21	1.65	7.27	14.55	21.82	570240	7.48	4.67	3.59	2.24
17	22	1.72	6.98	13.95	20.93	547033	7.84	4.90	3.76	2.35
13	15	1.54	7.79	15.58	23.38	610971	7.00	4.37	3.36	2.10
13	17	1.74	6.90	13.79	20.69	540745	7.92	4.95	3.80	2.38
13	18	1.85	6.49	12.97	19.46	508592	8.38	5.24	4.02	2.52
13	19	1.95	6.15	12.31	18.46	482511	8.85	5.53	4.25	2.65
13	20	2.05	5.85	11.71	17.56	458974	9.32	5.82	4.47	2.79
13	21	2.15	5.58	11.16	16.74	437626	9.78	6.11	4.69	2.93
13	22	2.26	5.31	10.62	15.93	416326	10.20	6.40	4.90	3.07
11	15	1.82	6.59	13.19	19.78	516976	8.26	5.16	3.96	2.48
11	18	2.18	5.50	11.01	16.51	431604	9.91	6.19	4.76	2.97
11	19	2.30	5.22	10.43	15.65	409085	10.50	6.54	5.04	3.14
11	20	2.42	4.96	9.92	14.88	388800	11.00	6.99	5.28	3.36
11	21	2.54	4.72	9.45	14.17	370431	11.50	7.22	5.52	3.47
11	22	2.67	4.49	8.99	13.48	352396	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/24T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A:BED

80 inches
12

GEAR	GEAR	144 HOLES SEED SPACING (ins)	1 LINE SEEDS/ft	2 LINE SEEDS/ft	3 LINE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	0.42	28.57	57.14	85.71	2240229	3.78	2.37	1.81	1.14
24	16	0.44	27.27	54.55	81.82	2138400	4.04	2.52	1.94	1.21
24	17	0.47	25.53	51.06	76.60	2001906	4.29	2.68	2.06	1.29
24	18	0.50	24.00	48.00	72.00	1881792	4.54	2.84	2.18	1.36
24	19	0.53	22.64	45.28	67.92	1775275	4.79	3.00	2.30	1.44
24	20	0.56	21.43	42.86	64.29	1680171	5.05	3.15	2.42	1.51
24	21	0.58	20.69	41.38	62.07	1622234	5.30	3.31	2.54	1.59
24	22	0.61	19.67	39.34	59.02	1542452	5.55	3.47	2.66	1.67
17	16	0.63	19.05	38.10	57.14	1493486	5.70	3.56	2.74	1.71
17	17	0.67	17.91	35.82	53.73	1404322	6.05	3.78	2.90	1.81
17	18	0.71	16.90	33.80	50.70	1325206	6.41	4.00	3.08	1.92
17	19	0.74	16.22	32.43	48.65	1271481	6.77	4.23	3.25	2.03
17	20	0.78	15.38	30.77	46.15	1206277	7.12	4.45	3.42	2.14
17	21	0.82	14.63	29.27	43.90	1147434	7.48	4.67	3.59	2.24
17	22	0.86	13.95	27.91	41.86	1094065	7.84	4.90	3.76	2.35
13	15	0.77	15.58	31.17	46.75	1221943	7.00	4.37	3.36	2.10
13	17	0.87	13.79	27.59	41.38	1081490	7.92	4.95	3.80	2.38
13	18	0.92	13.04	26.09	39.13	1022713	8.38	5.24	4.02	2.52
13	19	0.97	12.37	24.74	37.11	969996	8.85	5.53	4.25	2.65
13	20	1.03	11.65	23.30	34.95	913491	9.32	5.82	4.47	2.79
13	21	1.08	11.11	22.22	33.33	871200	9.78	6.11	4.69	2.93
13	22	1.13	10.62	21.24	31.86	832651	10.20	6.40	4.90	3.07
11	15	0.91	13.19	26.37	39.56	1033952	8.26	5.16	3.96	2.48
11	18	1.09	11.01	22.02	33.03	863207	9.91	6.19	4.76	2.97
11	19	1.15	10.43	20.87	31.30	818170	10.50	6.54	5.04	3.14
11	20	1.21	9.92	19.83	29.75	777600	11.00	6.99	5.28	3.36
11	21	1.27	9.45	18.90	28.35	740863	11.50	7.22	5.52	3.47
11	22	1.33	9.02	18.05	27.07	707441	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T/40T PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK 80 inches
LINES ON A BED 12

GEAR	GEAR	144 HOLES SEED SPACING (ins)	1 LINE SEEDS/ft	2 LINE SEEDS/ft	3 LINE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
							max kph	max mph	max kph	max mph
24	15	0.69	17.39	34.78	52.17	1363617	3.78	2.37	1.81	1.14
24	16	0.74	16.22	32.43	48.65	1271481	4.04	2.52	1.94	1.21
24	17	0.79	15.19	30.38	45.57	1191008	4.29	2.68	2.06	1.29
24	18	0.83	14.46	28.92	43.37	1133610	4.54	2.84	2.18	1.36
24	19	0.88	13.64	27.27	40.91	1069200	4.79	3.00	2.30	1.44
24	20	0.93	12.90	25.81	38.71	1011716	5.05	3.15	2.42	1.51
24	21	0.97	12.37	24.74	37.11	969996	5.30	3.31	2.54	1.59
24	22	1.02	11.76	23.53	35.29	922447	5.55	3.47	2.66	1.67
17	16	1.05	11.43	22.86	34.29	896091	5.70	3.56	2.74	1.71
17	17	1.11	10.81	21.62	32.43	847654	6.05	3.78	2.90	1.81
17	18	1.18	10.17	20.34	30.51	797369	6.41	4.00	3.08	1.92
17	19	1.24	9.68	19.35	29.03	758787	6.77	4.23	3.25	2.03
17	20	1.31	9.16	18.32	27.48	718241	7.12	4.45	3.42	2.14
17	21	1.37	8.76	17.52	26.28	686785	7.48	4.67	3.59	2.24
17	22	1.44	8.33	16.67	25.00	653400	7.84	4.90	3.76	2.35
13	15	1.28	9.38	18.75	28.13	735075	7.00	4.37	3.36	2.10
13	17	1.45	8.28	16.55	24.83	648894	7.92	4.95	3.80	2.38
13	18	1.54	7.79	15.58	23.38	610971	8.38	5.24	4.02	2.52
13	19	1.62	7.41	14.81	22.22	580800	8.85	5.53	4.25	2.65
13	20	1.71	7.02	14.04	21.05	550232	9.32	5.82	4.47	2.79
13	21	1.79	6.70	13.41	20.11	525640	9.78	6.11	4.69	2.93
13	22	1.88	6.38	12.77	19.15	500477	10.20	6.40	4.90	3.07
11	15	1.51	7.95	15.89	23.84	623110	8.26	5.16	3.96	2.48
11	18	1.82	6.59	13.19	19.78	516976	9.91	6.19	4.76	2.97
11	19	1.92	6.25	12.50	18.75	490050	10.50	6.54	5.04	3.14
11	20	2.02	5.94	11.88	17.82	465790	11.00	6.99	5.28	3.36
11	21	2.12	5.66	11.32	16.98	443819	11.50	7.22	5.52	3.47
11	22	2.22	5.41	10.81	16.22	423827	12.10	7.57	5.81	3.63

APPLICATION RATES FOR STAR 19T,24T 96/96/72 PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK 80 inches
LINES ON A BED 12

GEAR	GEAR	96/96/72 HOLES SEEDS/ft	AVERAGE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
					max kph	max mph	max kph	max mph
24	15	53.20	17.73	1390435	2.27	1.42	1.09	0.68
24	16	49.30	16.43	1288505	2.42	1.51	1.16	0.72
24	17	47.10	15.70	1231006	2.57	1.61	1.23	0.77
24	18	44.00	14.67	1149984	2.72	1.70	1.31	0.82
24	19	41.80	13.93	1092485	2.88	1.80	1.38	0.86
24	20	39.80	13.27	1040213	3.03	1.89	1.45	0.91
24	21	37.90	12.63	990554	3.18	2.00	1.53	0.96
24	22	35.90	11.97	938282	3.33	2.08	1.60	1.00
17	16	35.10	11.70	917374	3.42	2.14	1.64	1.03
17	17	33.00	11.00	862488	3.63	2.27	1.74	1.09
17	18	31.10	10.37	812830	3.85	2.40	1.85	1.15
17	19	29.50	9.83	771012	4.06	2.54	1.95	1.22
17	20	28.00	9.33	731808	4.27	2.67	2.05	1.28
17	21	26.80	8.93	700445	4.50	2.80	2.16	1.34
17	22	25.60	8.53	669082	4.70	2.94	2.26	1.41
13	15	28.70	9.57	750103	4.19	2.62	2.01	1.26
13	17	25.20	8.40	658627	4.75	2.97	2.28	1.43
13	18	23.90	7.97	624650	5.03	3.14	2.41	1.51
13	19	22.60	7.53	590674	5.31	3.32	2.55	1.59
13	20	21.40	7.13	559310	5.59	3.49	2.68	1.68
13	21	20.50	6.83	535788	5.87	3.67	2.82	1.76
13	22	19.50	6.50	509652	6.15	3.84	2.95	1.84
11	15	24.30	8.10	635105	4.96	3.10	2.38	1.49
11	18	20.10	6.70	525334	5.95	3.72	2.86	1.79
11	19	19.10	6.37	499198	6.28	3.92	3.01	1.88
11	20	18.10	6.03	473062	6.61	4.13	3.17	1.98
11	21	17.30	5.77	452153	6.94	4.33	3.33	2.08
11	22	16.50	5.50	431244	7.27	4.54	3.49	2.18

APPLICATION RATES FOR STAR 19T, 40T 96/96/72 PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

80 inches
12

GEAR	GEAR	96/96/72 HOLES SEEDS/ft	AVERAGE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
					max kph	max mph	max kph	max mph
24	15	31.70	10.57	828511	2.27	1.42	1.09	0.68
24	16	29.70	9.90	776239	2.42	1.51	1.16	0.72
24	17	28.00	9.33	731808	2.57	1.61	1.23	0.77
24	18	26.40	8.80	689990	2.72	1.70	1.31	0.82
24	19	25.00	8.33	653400	2.88	1.80	1.38	0.86
24	20	23.70	7.90	619423	3.03	1.89	1.45	0.91
24	21	22.60	7.53	590674	3.18	2.00	1.53	0.96
24	22	21.60	7.20	564538	3.33	2.08	1.60	1.00
17	16	21.00	7.00	548856	3.42	2.14	1.64	1.03
17	17	19.80	6.60	517493	3.63	2.27	1.74	1.09
17	18	18.80	6.27	491357	3.85	2.40	1.85	1.15
17	19	17.70	5.90	462607	4.06	2.54	1.95	1.22
17	20	16.80	5.60	439085	4.27	2.67	2.05	1.28
17	21	16.00	5.33	418176	4.50	2.80	2.16	1.34
17	22	15.30	5.10	399881	4.70	2.94	2.26	1.41
13	15	17.20	5.73	449539	4.19	2.62	2.01	1.26
13	17	15.10	5.03	394654	4.75	2.97	2.28	1.43
13	18	14.30	4.77	373745	5.03	3.14	2.41	1.51
13	19	13.60	4.53	355450	5.31	3.32	2.55	1.59
13	20	12.90	4.30	337154	5.59	3.49	2.68	1.68
13	21	12.30	4.10	321473	5.87	3.67	2.82	1.76
13	22	11.70	3.90	305791	6.15	3.84	2.95	1.84
11	15	14.50	4.83	378972	4.96	3.10	2.38	1.49
11	18	12.10	4.03	316246	5.95	3.72	2.86	1.79
11	19	11.50	3.83	300564	6.28	3.92	3.01	1.88
11	20	10.90	3.63	284882	6.61	4.13	3.17	1.98
11	21	10.40	3.47	271814	6.94	4.33	3.33	2.08
11	22	9.90	3.30	258746	7.27	4.54	3.49	2.18

APPLICATION RATES FOR STAR 19T,24T 144/144/108 PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

80 inches
12

GEAR	GEAR	144/144/108 SEEDS/ft.	AVERAGE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
					max kph	max mph	max kph	max mph
24	15	78.60	26.20	2054290	2.27	1.42	1.09	0.68
24	16	75.00	25.00	1960200	2.42	1.51	1.16	0.72
24	17	70.20	23.40	1834747	2.57	1.61	1.23	0.77
24	18	66.00	22.00	1724976	2.72	1.70	1.31	0.82
24	19	62.30	20.77	1628273	2.88	1.80	1.38	0.86
24	20	58.90	19.63	1539410	3.03	1.89	1.45	0.91
24	21	56.90	18.97	1487138	3.18	2.00	1.53	0.96
24	22	54.10	18.03	1413958	3.33	2.08	1.60	1.00
17	16	52.40	17.47	1369526	3.42	2.14	1.64	1.03
17	17	49.30	16.43	1288505	3.63	2.27	1.74	1.09
17	18	46.50	15.50	1215324	3.85	2.40	1.85	1.15
17	19	44.60	14.87	1165666	4.06	2.54	1.95	1.22
17	20	42.30	14.10	1105553	4.27	2.67	2.05	1.28
17	21	40.20	13.40	1050667	4.50	2.80	2.16	1.34
17	22	38.40	12.80	1003622	4.70	2.94	2.26	1.41
13	15	42.90	14.30	1121234	4.19	2.62	2.01	1.26
13	17	37.90	12.63	990554	4.75	2.97	2.28	1.43
13	18	35.90	11.97	938282	5.03	3.14	2.41	1.51
13	19	34.00	11.33	888624	5.31	3.32	2.55	1.59
13	20	32.00	10.67	836352	5.59	3.49	2.68	1.68
13	21	30.60	10.20	799762	5.87	3.67	2.82	1.76
13	22	29.20	9.73	763171	6.15	3.84	2.95	1.84
11	15	36.30	12.10	948737	4.96	3.10	2.38	1.49
11	18	30.30	10.10	791921	5.95	3.72	2.86	1.79
11	19	28.70	9.57	750103	6.28	3.92	3.01	1.88
11	20	27.30	9.10	713513	6.61	4.13	3.17	1.98
11	21	26.00	8.67	679636	6.94	4.33	3.33	2.08
11	22	24.80	8.27	648173	7.27	4.54	3.49	2.18

APPLICATION RATES FOR STAR 19T,40T 144/144/108 PRIMARY DRIVE BED DRILL

TRACTOR WHEEL TRACK
LINES ON A BED

80 inches
12

GEAR	GEAR	144/144/108 SEEDS/ft	AVERAGE SEEDS/ft	SEEDS/acre	FORWARD SPEED TO ROTATE UNIT AT 25 rpm		FORWARD SPEED TO ROTATE UNIT AT 12 rpm	
					max kph	max mph	max kph	max mph
24	15	47.80	15.93	1249301	2.27	1.42	1.09	0.68
24	16	44.60	14.87	1165666	2.42	1.51	1.16	0.72
24	17	41.80	13.93	1092485	2.57	1.61	1.23	0.77
24	18	39.80	13.27	1040213	2.72	1.70	1.31	0.82
24	19	37.50	12.50	980100	2.88	1.80	1.38	0.86
24	20	35.50	11.83	927828	3.03	1.89	1.45	0.91
24	21	34.00	11.33	888624	3.18	2.00	1.53	0.96
24	22	32.40	10.80	846806	3.33	2.08	1.60	1.00
17	16	31.40	10.47	820670	3.42	2.14	1.64	1.03
17	17	29.70	9.90	776239	3.63	2.27	1.74	1.09
17	18	28.00	9.33	731808	3.85	2.40	1.85	1.15
17	19	26.60	8.87	695218	4.06	2.54	1.95	1.22
17	20	25.20	8.40	658627	4.27	2.67	2.05	1.28
17	21	24.10	8.03	629878	4.50	2.80	2.16	1.34
17	22	22.90	7.63	598514	4.70	2.94	2.26	1.41
13	15	25.80	8.60	674309	4.19	2.62	2.01	1.26
13	17	22.80	7.60	595901	4.75	2.97	2.28	1.43
13	18	21.40	7.13	559310	5.03	3.14	2.41	1.51
13	19	20.40	6.80	533174	5.31	3.32	2.55	1.59
13	20	19.30	6.43	504425	5.59	3.49	2.68	1.68
13	21	18.40	6.13	480902	5.87	3.67	2.82	1.76
13	22	17.60	5.87	459994	6.15	3.84	2.95	1.84
11	15	21.90	7.30	572378	4.96	3.10	2.38	1.49
11	18	18.10	6.03	473062	5.95	3.72	2.86	1.79
11	19	17.20	5.73	449539	6.28	3.92	3.01	1.88
11	20	16.30	5.43	426017	6.61	4.13	3.17	1.98
11	21	15.60	5.20	407722	6.94	4.33	3.33	2.08
11	22	14.90	4.97	389426	7.27	4.54	3.49	2.18

STANHAY STAR

OPERATOR CHECK LIST

READ OPERATORS MANUAL FULLY BEFORE OPERATING THIS MACHINE.
THIS CHECK LIST IS ONLY A REMINDER OF THE KEY STEPS IN SETTING A
MACHINE, AND IS NOT COMPREHENSIVE.

A In Yard

1. Check units are clean and dry.
2. Check coulters and seed guides are correctly fitted.
3. Check agitator, singulator, vacuum release hole are all as recommended for the seed to be planted.
4. Using operators manual, select and note recommended seed discs, vacuum mb, pressure mb, rpm seed discs, gear setting, forward speed, landwheel rpm.
5. Set gearbox(es) to required gear setting. Check all drive chains are in line and drive shaft locking collar screws are fitted securely.
6. Fit discs, (concave side towards vacuum galleries), open both valves on fan engage PTO, raise engine rpm to give recommended vacuum, turn landwheels and check discs seal.
7. Fit hopper side of units, flick singulators several times, check drive chains and units all turn smoothly.
8. Check seed emptying plugs fitted, fill hoppers, adjust singulators to setting 16 (for zero singulation), place container under each unit, rotate landwheels to prime discs.
9. Adjust vacuum and pressure to recommended levels, noting required tractor engine speed.
10. Rotate landwheel at approximately recommended landwheel rpm and set singulator on calibration unit.
11. Set and clamp all singulators to same setting.
12. Set depth of coulter (and seed press wheel).
13. Empty hoppers or maintain vacuum during journey to field.

B In Field

1. Check linkage stabilisers or check chains are adjusted and tight.
2. Adjust tractor linkage so that toolbar is level and headstock is vertical in work.
3. Check and adjust landwheels so toolbar working height is 510 mm (20.25 ins) at centre for 100 mm toolbar and for 180 mm toolbar 550mm (21.75").
4. Selector tractor gear to give recommended forward speed at required tractor engine speed.
5. Fill hoppers, prime discs, check vacuum and pressure levels.
6. Check all seed discs are picking up and delivering seed.
7. Check coulters are not blocked and chutes are dry.
8. Check bout marker setting and operation.

C In Work

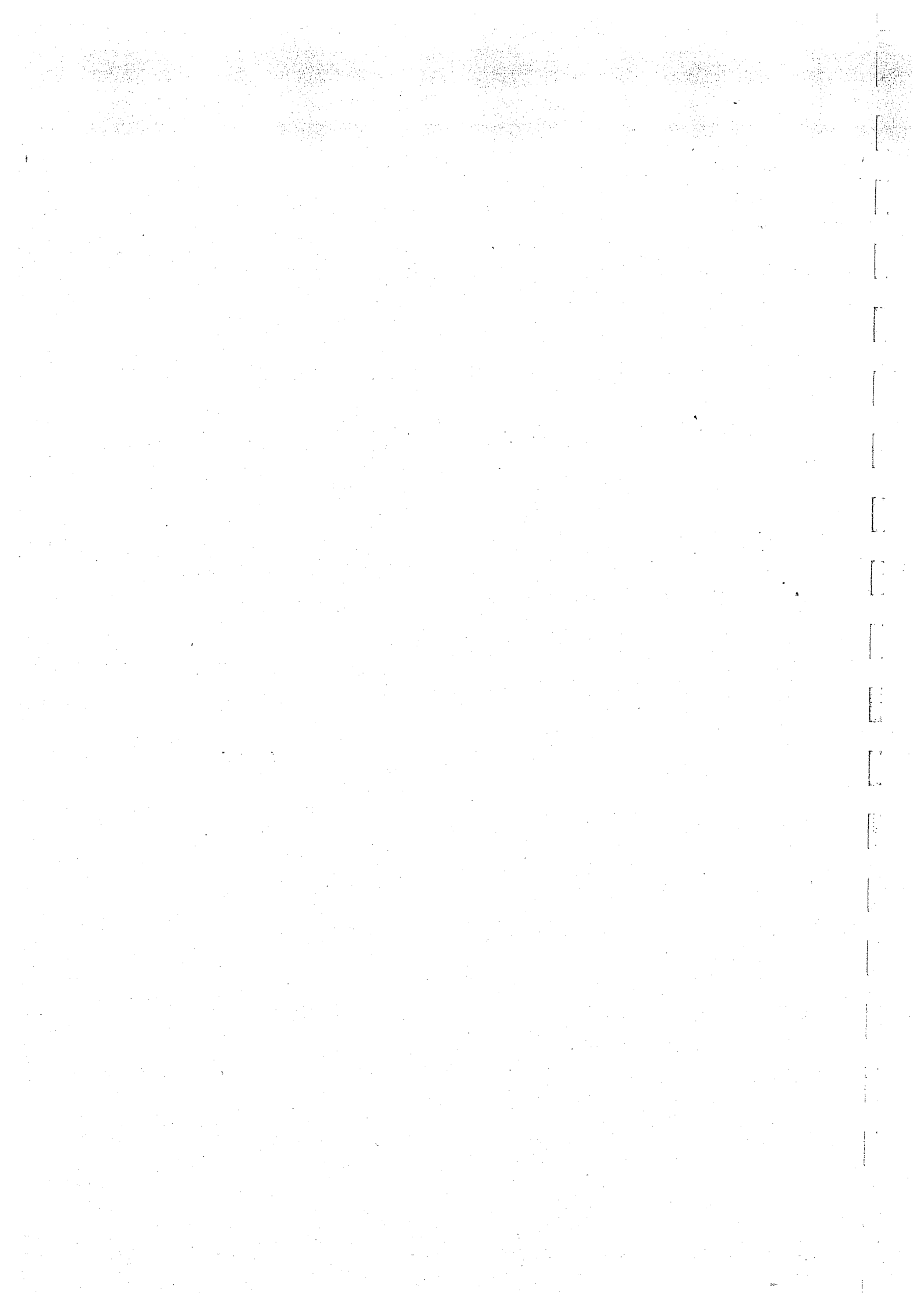
1. Check sowing depth, clod deflectors, coverers, seed press wheel, wheel scrapers.
2. Check row matching.
3. Always raise and lower machine fully, and on the move. If in doubt, check coulters for blockage.
4. Always operate at recommended forward speed, and check vacuum and pressure readings regularly.
5. Check seed discs pick-up regularly: raise machine on the move at normal drilling speed, maintain vacuum, stop and inspect seed discs.
6. Clean units at least twice a day and after work: store discs in dry place.

Note:

1. SECURE PTO SHAFT COVER TO PREVENT ROTATION IN USE. NEVER EXCEED 540 RPM PTO SPEED.
2. CORRECT OPERATION IS THE RESPONSIBILITY OF THE OPERATOR WHO SHOULD CHECK PERIODICALLY THAT THE DESIRED SEEDING RATE, PLANTING DEPTH AND MACHINE PERFORMANCE ARE BEING ACHIEVED.

GUIDE LIST

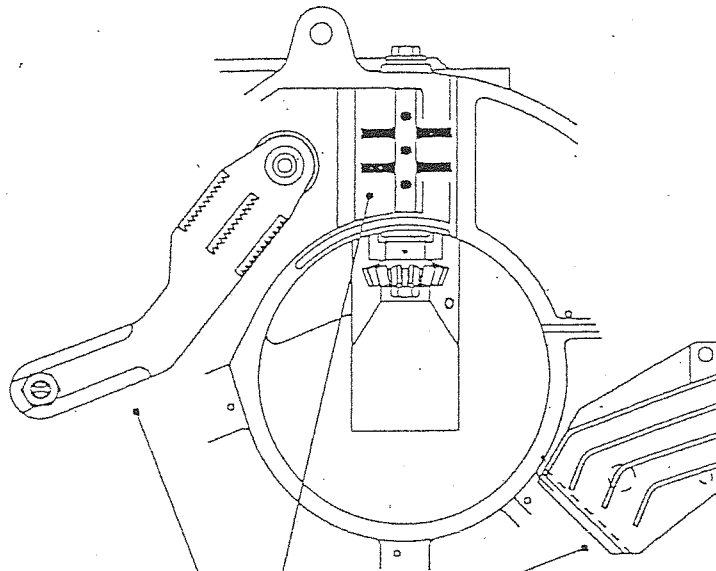
ARAMANTHUS - GREEN
ASPARAGUS - RAW
BORAGE
BRASSICAE
CARROT - RAW
CARROT - PELLETED
CARTHAMUS
CHICORY - WITLOOF
CHRYSANTHEMUM
CORIANDER
CUCUMBER
DELPHINIUM
DILL
FENUGREEK
HELICHRYSUM
LARKSPUR
LEEK - RAW
LEEK - PELLETED
LETTUCE - RAW
LEAF LETTUCE - RAW
MELON
MUSTARD
NIGELLA BLACK POD
NIGELLA ORIENTALIS
ONION - RAW
ONION - PELLETED
PAPRIKA
PARSLEY
PARSNIP - RAW
PARSNIP - ENCRUSTED/PROCOAT
PARSNIP - PELLETED
PINUS RADIATA
POPPY
RADISH
RED BEET
SPINACH - RAW
SUGARBEET - PELLETED
SWEDE
SWEET WILLIAM
TOMATO
TURNIP - COATED
WATERMELON
WHEAT



ARAMANTHUS - GREEN

Application Rate	Recommended Seed Disc Part No. Description	Typical Vacuum m.b.	Pressure m.b.	Recommended Max Seed Disc Speed	Special Instructions
33-117 seeds / metre per row	6902558 \varnothing 0.5x96x 2 L	50	20% of Vac	25 r.p.m.	Use 16T Unit Drive Shaft Sprocket

USE SINGLE LINE COULTER

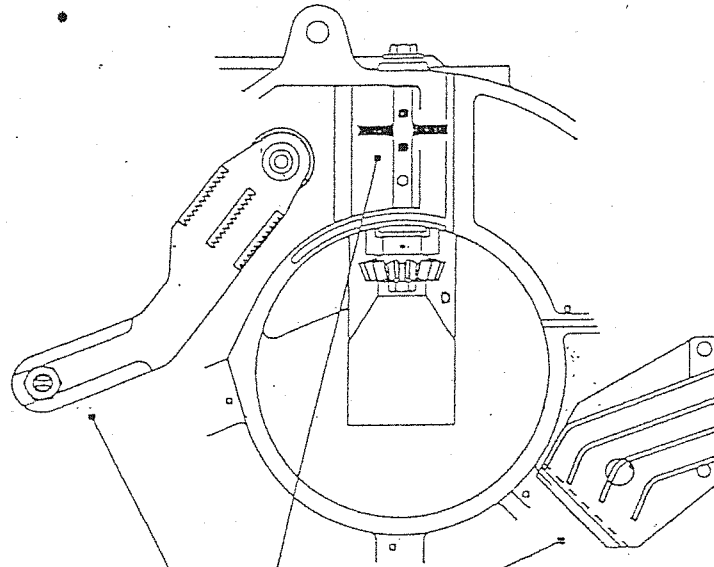


- Notes:
- 1/. Use standard singulator for green Aramanthus.
 - 2/. Use standard agitator for green Aramanthus.
 - 3/. Remove plastic seed dividers.
 - 4/. The seed disc speeds recommended will produce acceptable spacing. Increasing disc speed will cause seed spacing to deteriorate. Reducing disc speed will result in spacing improvement together with lower vacuum requirements.
 - 5/. Excessive vacuum requirements normally indicate a problem: -
 - a) Worn or damaged seed discs or air gallery blocks.
 - b) Incorrect hole size in seed discs.
 - c) Excessive disc speed.
 - d) Singulators set too aggressively.

ASPARAGUS - RAW

- FINAL VACUUM ADJUSTMENT TO BE MADE WHEN DISCS ARE PRIMED WITH SEED.

Spacing Range	Recommended Seed Disc Part No. Description	Typical Vacuum m.b.	Pressure m.b.	Recommended Max. Seed Disc Speed	Special Instructions
Single line 50-89mm (2.0-3.5ins).	6902975 Ø1.4x95x 1 L	50	20% of Vac	12 r.p.m.	Use 11T Unit Drive Shaft Sprocket
50-177mm (2.0-7.0ins)	6902963 Ø1.4x48x 1 L	60	20% of Vac	25 r.p.m.	
108-177mm (4.2-7.0ins)	6902963 Ø1.4x48x 1 L	40	20% of Vac	12 r.p.m.	

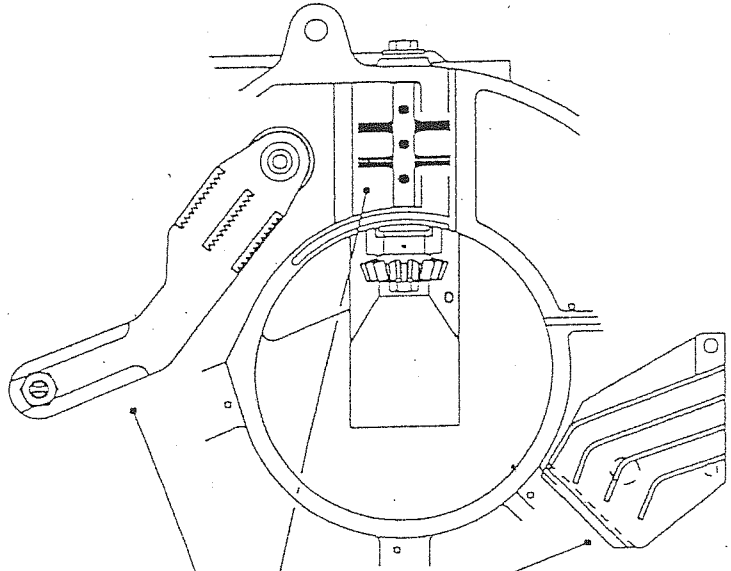


Notes:

- 1/. Use standard singulator for raw asparagus.
- 2/. Use agitator with only 3 fingers where shown for raw asparagus.
- 3/. Remove plastic seed dividers.
- 4/. The seed disc speeds recommended will produce acceptable spacing. Increasing disc speed will cause seed spacing to deteriorate. Reducing disc speed will result in spacing improvement together with lower vacuum requirements.
- 5/. Excessive vacuum requirements normally indicate a problem: -
 - a) Worn or damaged seed discs or air gallery blocks.
 - b) Incorrect hole size in seed discs.
 - c) Excessive disc speed.
 - d) Singulators set too aggressively.

BORAGE

Spacing Range	Recommended Seed Disc Part No. Description	Typical Vacuum m.b.	Pressure m.b.	Recommended Max. Seed Disc Speed	Special Instructions
Single line 25-89mm (1.0-3.5ins)	6902975 Ø1.4x96x 1 L	60	20% of Vac	25 r.p.m.	Use 11T Unit Drive Shaft Sprocket



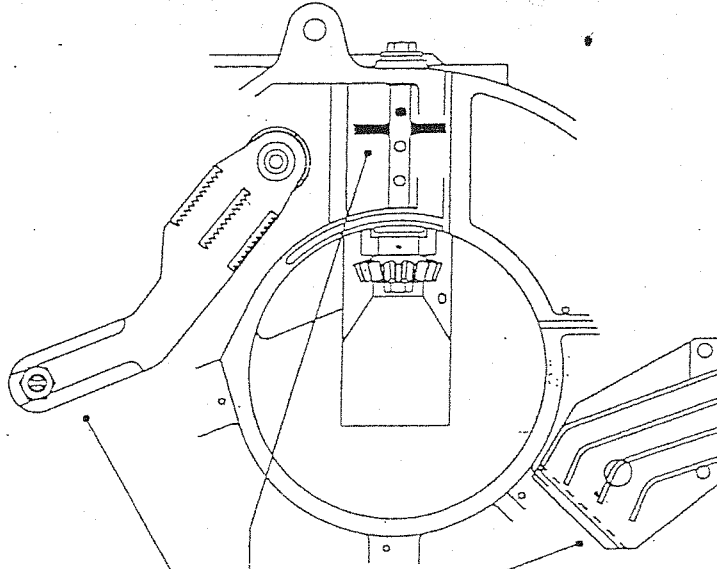
- Notes:
- 1/ Use standard singulator for borage.
 - 2/ Use standard agitator for borage.
 - 3/ Remove plastic seed dividers.
 - 4/ The seed disc speeds recommended will produce acceptable spacing. Increasing disc speed will cause seed spacing to deteriorate. Reducing disc speed will result in spacing improvement together with lower vacuum requirements.
 - 5/ Excessive vacuum requirements normally indicate a problem: -
 - a) Worn or damaged seed discs or air gallery blocks.
 - b) Incorrect hole size in seed discs.
 - c) Excessive disc speed.
 - d) Singulators set too aggressively.

BRASSICAE

1.75 - 2.0mm . GRADE H

IF SEED IS NOT POWDER DRESSED IT WILL LEAVE THE DISC AT THE VACUUM RELEASE POINT MORE READILY.
 IMPROVING SPACING, IF DRESSED WITH FRENCH CHALK.
 FINAL VACUUM ADJUSTMENT TO BE MADE WHEN DISCS ARE PRIMED WITH SEED.

Spacing Range	Recommended Seed Disc Part No. Description	Typical Vacuum m.b.	Pressure m.b.	Recommended Max. Seed Disc Speed	Special Instructions
Single line	50-177mm (2.0-7.0ins)	50	20% of Vac	25 r.p.m.	Use 11T Unit Drive Shaft Sprocket
	99-354mm (3.9-14.0ins)	50	20% of Vac	25 r.p.m.	
	198-709mm (7.8-27.9ins)	50	20% of Vac	25 r.p.m.	
Multi-line	67-120mm (2.6-4.7ins)	40	20% of Vac	12 r.p.m.	Use 11T Unit Drive Shaft Sprocket
	108-177mm (4.2-7.0ins)	30	20% of Vac	12 r.p.m.	
	200-354mm (7.9-14.0ins)	30	20% of Vac	12 r.p.m.	



Notes:

- 1/. Use standard singulator for brassicae.
- 2/. Use agitator with only 2 fingers fitted where shown for brassicae.
- 3/. Remove plastic seed dividers for single line work.
- 4/. The seed disc speeds recommended will produce acceptable spacing.

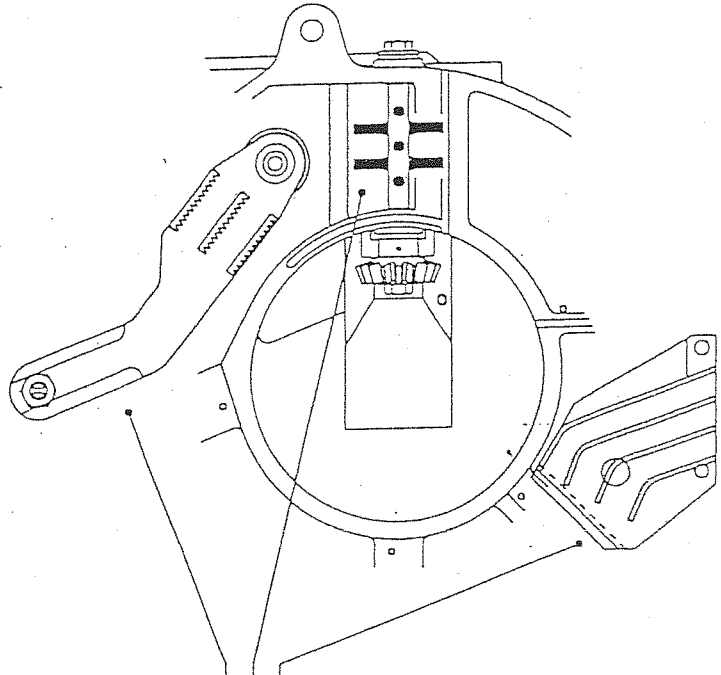
Increasing disc speed will cause seed spacing to deteriorate.
 Reducing disc speed will result in spacing improvement together with lower vacuum requirements.

- 5/. Excessive vacuum requirements normally indicate a problem :-

- a) Worn or damaged seed discs or air gallery blocks.
- b) Incorrect hole size in seed discs.
- c) Excessive disc speed.
- d) Singulators set too aggressively.

CARROT - RAW

- A/. WHEN PLANTING RAW CARROT USE A $\varnothing 0.6$ MM HOLE SIZE SEED DISC, AND MAXIMUM DISC SPEED OF 25 RPM.
B/. REFER TO CHARTS ON PAGES 40 TO 51 TO ESTABLISH SEED DISC REQUIRED, TOGETHER WITH GEAR SETTING.
CHARTS HAVE BEEN PREPARED FOR ALL POPULAR BED WIDTHS, AND BOTH 11T & 16T UNIT DRIVE SPROCKETS.
RATES SHOWN ARE BASED ON 4 THREE LINE ROW UNITS PER BED.
FOR NON 4 ROW UNIT BED MACHINES, DIVIDE THE REQUIRED POPULATION BY ACTUAL NUMBER OF ROW UNITS
ON EACH BED, MULTIPLY THIS FIGURE BY 4, AND USE THIS POPULATION WHEN REFERING TO CHARTS.
C/. HAVING ESTABLISHED GEAR SETTING, REFER TO CHARTS ON PAGES 25 TO 38 FOR MAXIMUM FORWARD SPEED.
D/. VACUUM LEVELS WILL DEPEND ON DISC SELECTION, DISC SPEED AND SEED SIZE, BUT 50 MB IS TYPICAL.
E/. PRESSURE SHOULD BE SET AT 20% OF VACUUM, OR 10 MB, WHICHEVER IS HIGHER.



Notes:

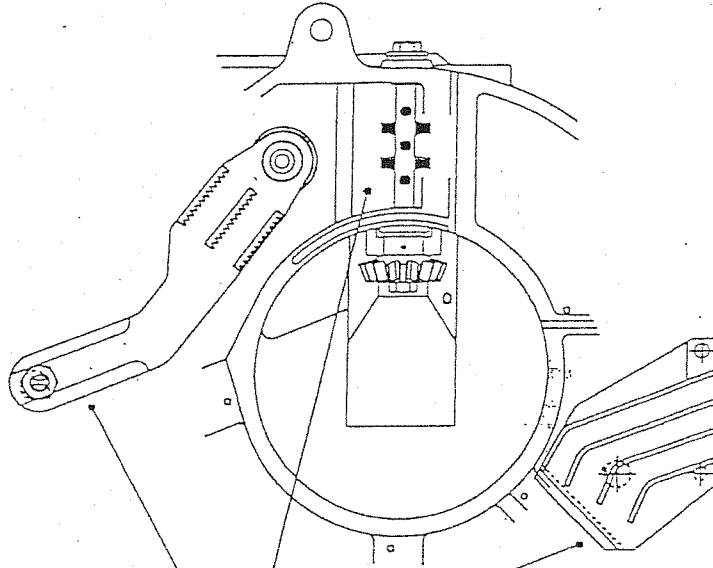
- 1/. Use standard singulator for raw carrot.
- 2/. Use standard agitator for raw carrot.
- 3/. Remove plastic seed dividers for single line work.
- 4/. The seed disc speeds recommended will produce acceptable spacing.
Increasing disc speed will cause seed spacing to deteriorate.
Reducing disc speed will result in spacing improvement together with lower vacuum requirements.
- 5/. Excessive vacuum requirements normally indicate a problem :-
 - a) Worn or damaged seed discs or air gallery blocks.
 - b) Incorrect hole size in seed discs.
 - c) Excessive disc speed.
 - d) Singulators set too aggressively.

CARROT - PELLETTED

- 2.0 - 2.75mm

FINAL VACUUM ADJUSTMENTS TO MADE WHEN DISCS ARE PRIMED WITH SEED.

Spacing Range	Recommended Seed Disc Part No. Description	Typical Vacuum m.b.	Pressure m.b.	Recommended Max. Seed Disc Speed	Special Instructions
Single line 50-89mm (2.0-3.5ins) 108-177mm (4.2-7.0ins)	6902534 Ø1.2x96x 1 L 6902626 Ø1.2x48x 1 L	50 40	20% of Vac 20% of Vac	12 r.p.m. 12 r.p.m.	Use 11T Unit Drive Shaft Sprocket
Multi-line 50-89mm (2.0-3.5ins) 50-89mm (2.0-3.5ins) 108-177mm (4.2-7.0ins)	6902640 Ø1.2x96x 2 L 6902564 Ø1.2x96x 3 L 6902960 Ø1.2x48x 2 L	60 60 50	20% of Vac 20% of Vac 20% of Vac	12 r.p.m. 12 r.p.m. 12 r.p.m.	Use 11T Unit Drive Shaft Sprocket



Notes:

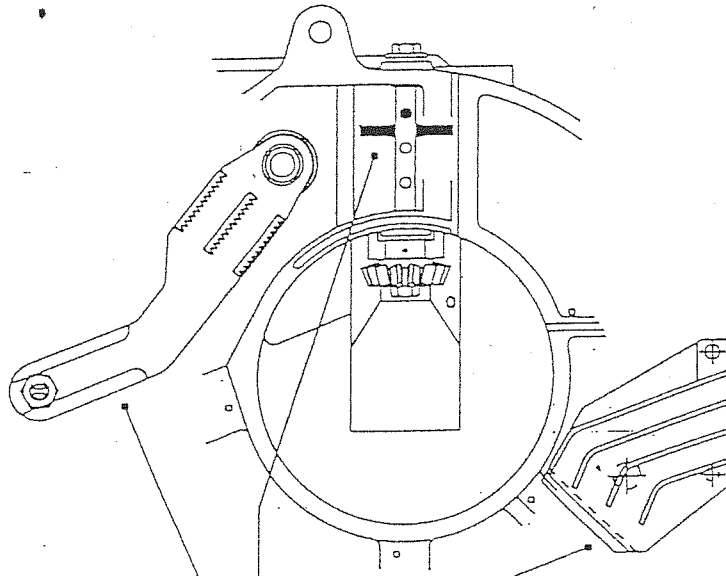
- 1/. Use standard singulator for pelleted carrot.
- 2/. Use pelleted agitator for pelleted carrot.
- 3/. Remove plastic seed dividers for single line work.
- 4/. The seed disc speeds recommended will produce acceptable spacing. Increasing disc speed will cause seed spacing to deteriorate. Reducing disc speed will result in spacing improvement together with lower vacuum requirements.
- 5/. Excessive vacuum requirements normally indicate a problem :-
 - a) Worn or damaged seed discs or air gallery blocks.
 - b) Incorrect hole size in seed discs.
 - c) Excessive disc speed.
 - d) Singulators set too aggressively.

11/73

CARROT - PELLETTED

3.0 - 3.5mm : NOT POLYMER COATED : APPROX. 560/10g
 HEAVIER SEED WILL REQUIRE HIGHER VACUUM LEVELS.
 FINAL VACUUM ADJUSTMENT TO BE MADE WHEN DISCS ARE PRIMED WITH SEED.

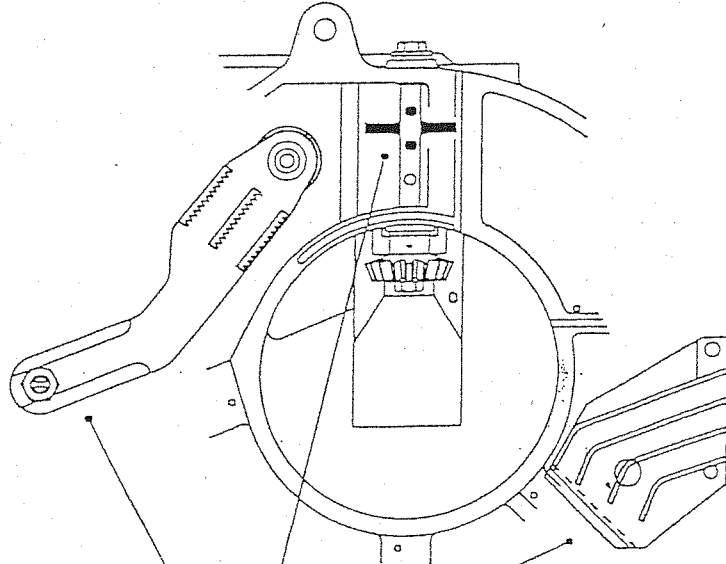
Spacing Range	Recommended Seed Disc Part No. Description	Typical Vacuum m.b.	Pressure m.b.	Recommended Max. Seed Disc Speed	Special Instructions
Single line 25-89mm (1.0-3.5ins)	6903144 Ø1.6x96x 1 L	70	20% of Vac	25 r.p.m.	Use 11T Unit Drive Shaft Sprocket
33-118mm (1.3-4.7ins)	6903209 Ø1.6x72x 1 L	70	20% of Vac	25 r.p.m.	
50-177mm (2.0-7.0ins)	6903210 Ø1.6x48x 1 L	60	20% of Vac	25 r.p.m.	
Multi-line 50-89mm (2.0-3.5ins)	6903211 Ø1.6x96x-2 L	40	20% of Vac	12 r.p.m.	Use 11T Unit Drive Shaft Sprocket
67-120mm (2.6-4.7ins)	6903157 Ø1.6x72x 2 L	40	20% of Vac	12 r.p.m.	
108-177mm (4.2-7.0ins)	6902821 Ø1.6x48x 2 L	40	20% of Vac	12 r.p.m.	



- Notes:
- 1/. Use standard agitator for pelleted carrot.
 - 2/. Use agitator with only 2 fingers fitted where shown for pelleted carrot.
 - 3/. Remove plastic seed dividers for single line work.
 - 4/. The seed disc speeds recommended will produce acceptable spacing. Increasing disc speed will cause seed spacing to deteriorate.
Reducing disc speed will result in spacing improvement together with lower vacuum requirements.
 - a) Worn or damaged seed discs or air gallery blocks.
 - b) Incorrect hole size in seed discs.
 - c) Excessive disc speed.
 - d) Singulators set too aggressively.
 - 5/. Excessive vacuum requirements normally indicate a problem :-

CARTHAMUS

Application Rate	Recommended Seed Disc Part No. Description	Typical Vacuum m.b.	Pressure m.b.	Recommended Max. Seed Disc Speed	Special Instructions
8-29 seeds / metre per row	6902671 Ø2.0x48x 1 L	50	20% of Vac	25 r.p.m.	Use 16T Unit Drive Shaft Sprocket

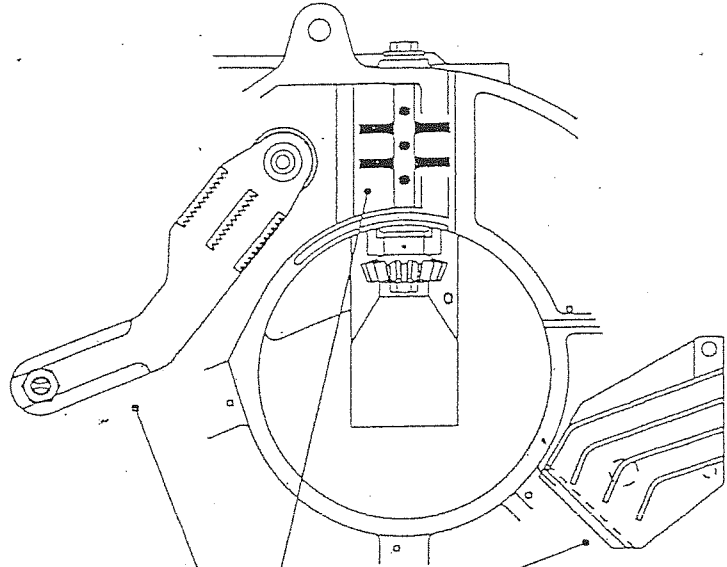


Notes:

- 1/. Use standard singulator for Carthamus.
- 2/. Use agitator with only 3 fingers where shown for Carthamus.
- 3/. Remove plastic seed dividers.
- 4/. The seed disc speeds recommended will produce acceptable spacing. Increasing disc speed will cause seed spacing to deteriorate. Reducing disc speed will result in spacing improvement together with lower vacuum requirements.
- 5/. Excessive vacuum requirements normally indicate a problem :-
 - a) Worn or damaged seed discs or air gallery blocks.
 - b) Incorrect hole size in seed discs.
 - c) Excessive disc speed.
 - d) Singulators set too aggressively.

CHICORY-WITLOOF. RAW / COATED

Spacing Range	Recommended Seed Disc Part No. Description	Typical Vacuum m.b.	Pressure m.b. of Vac	Recommended Max. Seed Disc Speed	Special Instructions
Single line 50-89mm (2.0-3.5ins)	6902532 Ø0.5x96x 1 L	40	20% of Vac	12 r.p.m.	Use 11T Unit Drive Shaft Sprocket

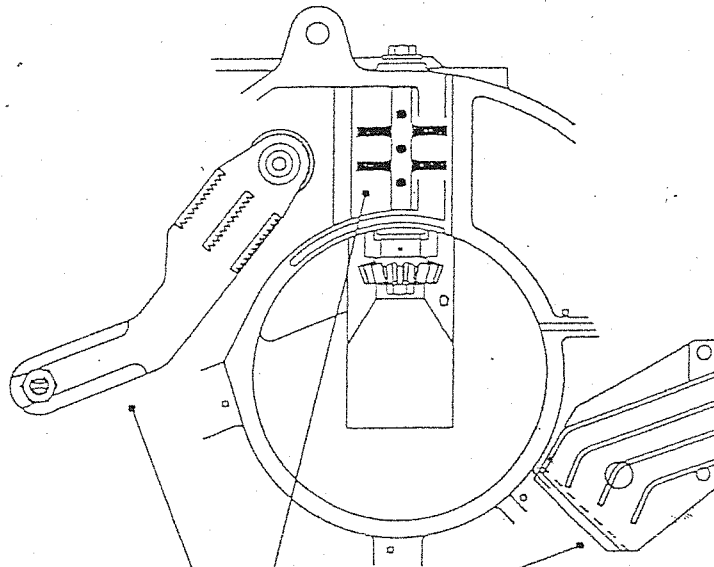


Notes:

- 1/. Use standard singulator for raw/coated chicory.
- 2/. Use standard agitator for raw/coated chicory.
- 3/. Remove plastic seed dividers.
- 4/. The seed disc speeds recommended will produce acceptable spacing. Increasing disc speed will cause seed spacing to deteriorate. Reducing disc speed will result in spacing improvement together with lower vacuum requirements.
- 5/. Excessive vacuum requirements normally indicate a problem :-
 - a) Worn or damaged seed discs or air gallery blocks.
 - b) Incorrect hole size in seed discs.
 - c) Excessive disc speed.
 - d) Singulators set too aggressively.

CHRYSANTHEMUM

Spacing Range	Recommended Seed Disc Part No. Description	Typical Vacuum m.b.	Pressure m.b.	Recommended Max. Seed Disc Speed	Special Instructions
Multi-line 17-59mm (0.7-2.3ins)	6902667 Ø0.5x144x 3 L	50	20% of Vac	25 r.p.m.	Use 11T Unit Drive Shaft Sprocket

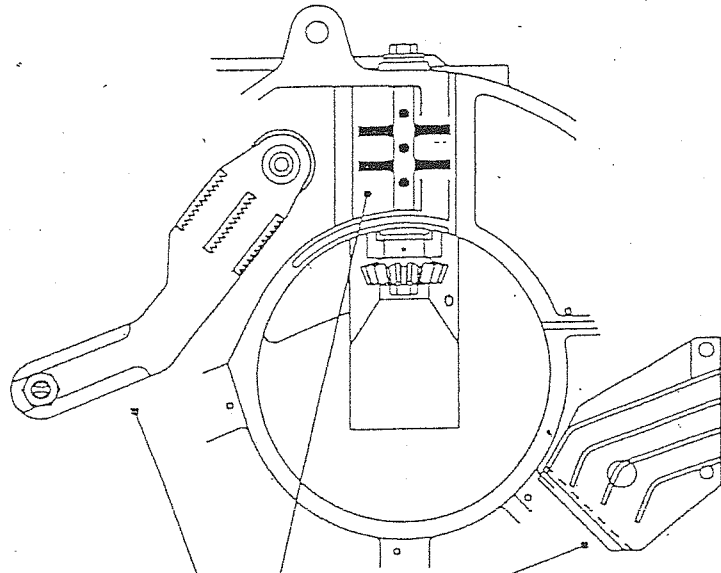


Notes:

- 1/. Use standard singulator for chrysanthemum.
- 2/. Use standard agitator for chrysanthemum.
- 3/. Fit chrysanthemum seed divider.
- 4/. The seed disc speeds recommended will produce acceptable spacing. Increasing disc speed will cause seed spacing to deteriorate. Reducing disc speed will result in spacing improvement together with lower vacuum requirements.
- 5/. Excessive vacuum requirements normally indicate a problem :-
 - a) Worn or damaged seed discs or air gallery blocks.
 - b) Incorrect hole size in seed discs.
 - c) Excessive disc speed.
 - d) Singulators set too aggressively.

CORIANDER

Spacing Range	Recommended Seed Disc Part No. Description	Typical Vacuum m.b.	Pressure m.b. of Vac	Recommended Max. Seed Disc Speed	Special Instructions
Single line 25-89mm (1.0-3.5ins)	6902975 Ø1.4x96x 1 L	50	20% of Vac	25 r.p.m.	Use 11T Unit Drive Shaft Sprocket
Multi-line 25-89mm (1.0-3.5ins)	6903139 Ø1.4x96x 2 L	50	20% of vac	25 r.p.m.	Use 11T Unit Drive Shaft Sprocket

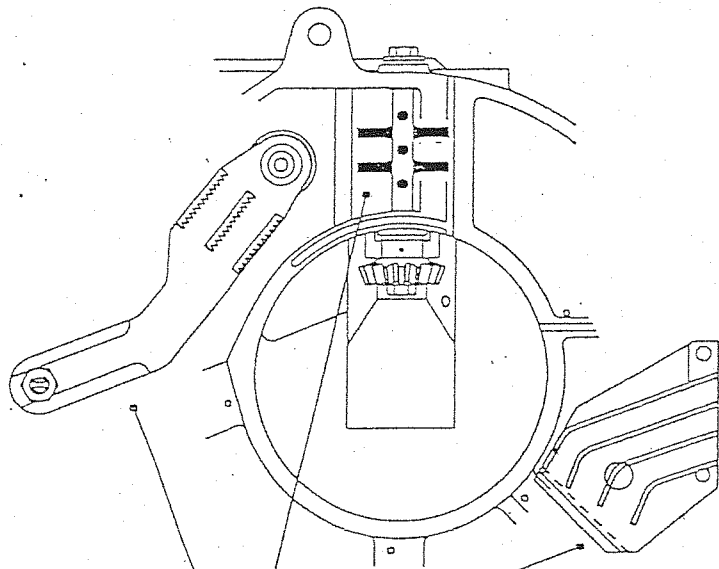


Notes:

- 1/. Use standard singulator for coriander.
- 2/. Use standard agitator for coriander.
- 3/. Remove plastic seed dividers for single line work.
- 4/. The seed disc speeds recommended will produce acceptable spacing. Increasing disc speed will cause seed spacing to deteriorate.
Reducing disc speed will result in spacing improvement together with lower vacuum requirements.
- 5/. Excessive vacuum requirements normally indicate a problem :-
 - a) Worn or damaged seed discs or air gallery blocks.
 - b) Incorrect hole size in seed discs.
 - c) Excessive disc speed.
 - d) Singulators set too aggressively.

CUCUMBER

Spacing Range	Recommended Seed Disc Part No. Description	Typical Vacuum m.b.	Pressure m.b.	Recommended Max. Seed Disc Speed	Special Instructions
Single line 99-354mm (3.9-14.0ins)	6902712 Ø1.6x24x 1 L	40	20% of Vac	25 r.p.m.	Use 11T Unit Drive Shaft Sprocket

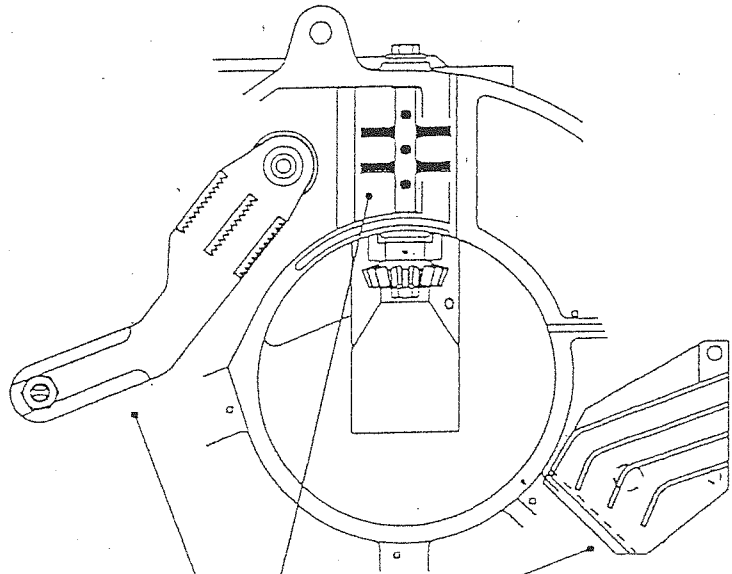


Notes:

- 1/. Use standard singulator for cucumber.
- 2/. Use standard agitator for cucumber.
- 3/. Remove plastic seed dividers.
- 4/. The seed disc speeds recommended will produce acceptable spacing. Increasing disc speed will cause seed spacing to deteriorate. Reducing disc speed will result in spacing improvement together with lower vacuum requirements.
 - a) Worn or damaged seed discs or air gallery blocks.
 - b) Incorrect hole size in seed discs.
 - c) Excessive disc speed.
 - d) Singulators set too aggressively.
- 5/. Excessive vacuum requirements normally indicate a problem:-

DELPHINIUM

Application Rate	Recommended Seed Disc Part No. Description	Typical Vacuum m.b.	Pressure m.b. of Vac	Recommended Max. Seed Disc Speed	Special Instructions
25-88 seeds / metre per row	6902958 Ø0.8x144x.1 L	60	20%	25 r.p.m.	Use 16T Unit Drive Shaft Sprocket

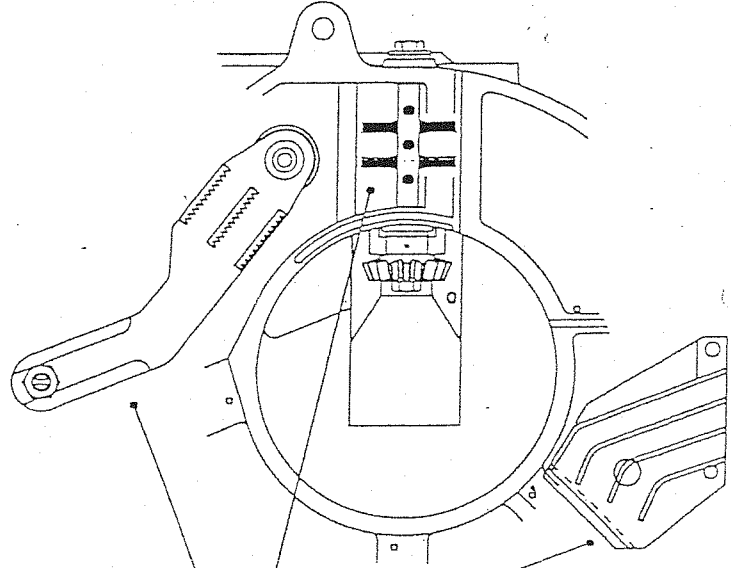


Notes:

- 1/. Use standard singulator for Delphinium.
- 2/. Use standard agitator for Delphinium.
- 3/. Remove plastic seed dividers.
- 4/. The seed disc speeds recommended will produce acceptable spacing. Increasing disc speed will cause seed spacing to deteriorate. Reducing disc speed will result in spacing improvement together with lower vacuum requirements.
- 5/. Excessive vacuum requirements normally indicate a problem :-
 - a) Worn or damaged seed discs or air gallery blocks.
 - b) Incorrect hole size in seed discs.
 - c) Excessive disc speed.
 - d) Singulators set too aggressively.

DILL

Spacing Range	Recommended Seed Disc Part No. Description	Typical Vacuum m.b.	Pressure m.b.	Recommended Max. Seed Disc Speed	Special Instructions
Single line 25-89mm (1.0-3.5ins)	5902566 Ø0.6x95x 1 L	40	10% of Vac	25 r.p.m.	Use 11T Unit Drive Shaft Sprocket

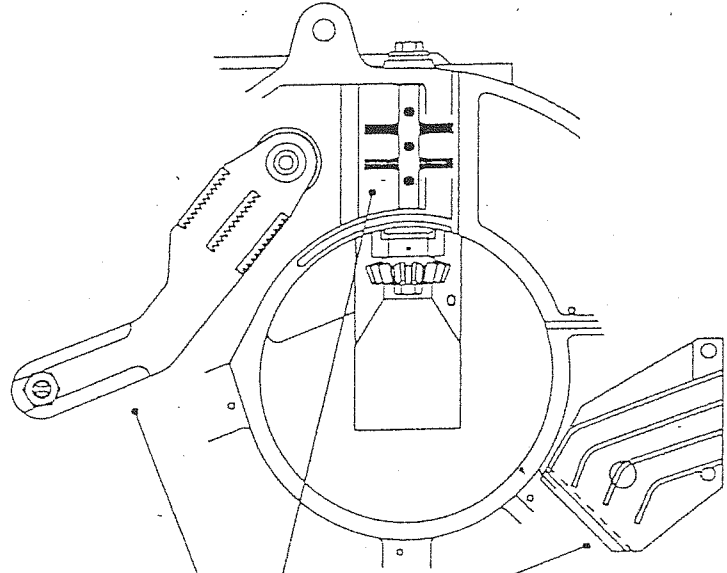


Notes:

- 1/. Use standard singulator for dill.
- 2/. Use standard agitator for dill.
- 3/. Remove plastic seed dividers.
- 4/. The seed disc speeds recommended will produce acceptable spacing. Increasing disc speed will cause seed spacing to deteriorate. Reducing disc speed will result in spacing improvement together with lower vacuum requirements.
- 5/. Excessive vacuum requirements normally indicate a problem :-
 - a) Worn or damaged seed discs or air gallery blocks.
 - b) Incorrect hole size in seed discs.
 - c) Excessive disc speed.
 - d) Singulators set too aggressively.

FENUGREEK

Spacing flange	Recommended Seed Disc Part No. Description	Typical Vacuum m.b.	Pressure m.b.	Recommended Max. Seed Disc Speed	Special Instructions
Single line 25-89mm (1.0-3.5ins)	6902975 \varnothing 1.4x96x 1 L	60	20% of vac	25 r.p.m.	Use 11T Unit Drive Shaft Sprocket
Multi-line 25-89mm (1.0-3.5ins)	6903139 \varnothing 1.4x96x 2 L	60	20% of Vac	25 r.p.m.	Use 11T Unit Drive Shaft Sprocket

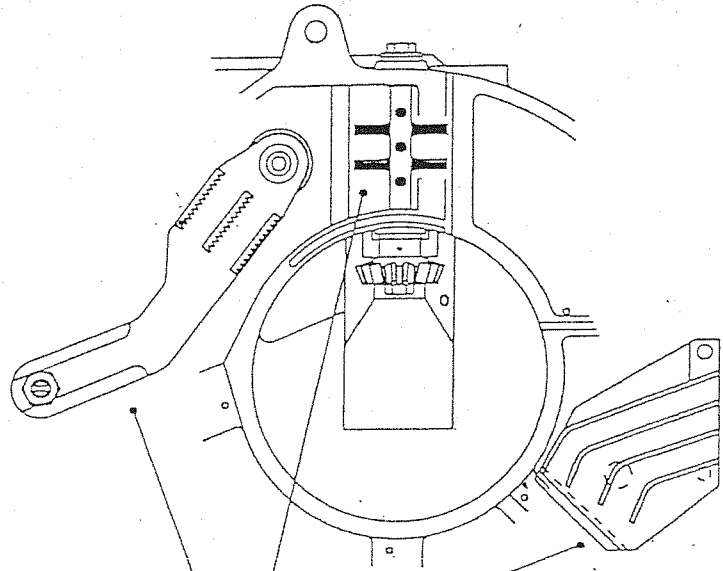


Notes:

- 1/. Use standard singulator for fenugreek.
- 2/. Use standard agitator for fenugreek.
- 3/. Remove plastic seed dividers for single line work.
- 4/. The seed disc speeds recommended will produce acceptable spacing. Increasing disc speed will cause seed spacing to deteriorate. Reducing disc speed will result in spacing improvement together with lower vacuum requirements.
- 5/. Excessive vacuum requirements normally indicate a problem :-
 - a) Worn or damaged seed discs or air gallery blocks.
 - b) Incorrect hole size in seed discs.
 - c) Excessive disc speed.
 - d) Singulators set too aggressively.

HELICHRYSUM

Application Rate	Recommended Seed Disc Part No. Description	Typical Vacuum m.b.	Pressure m.b.	Recommended Max. Seed Disc Speed	Special Instructions
25-88 seeds / metre per row	6903247 \varnothing 0.6x14x 1 L	50	20% of Vac	25 r.p.m.	Use 11T Unit Drive Shaft Sprocket

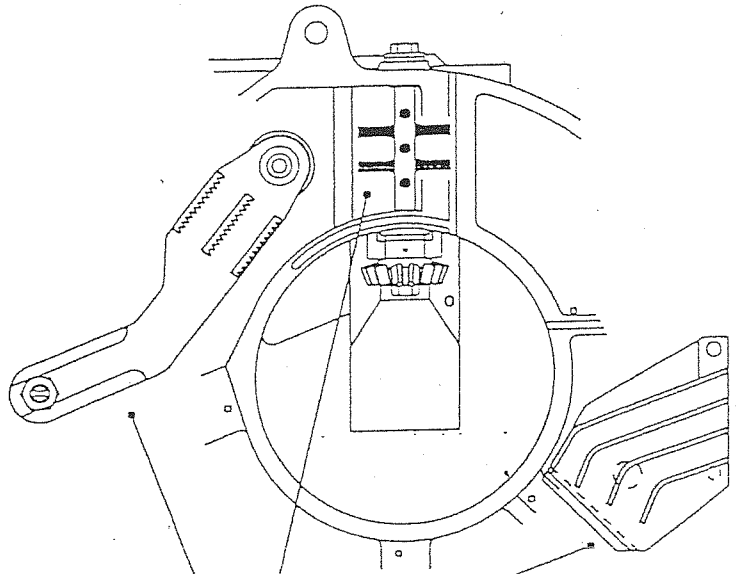


Notes:

- 1/. Use standard singulator for Helichrysum.
- 2/. Use standard agitator for Helichrysum.
- 3/. Remove plastic seed dividers.
- 4/. The seed disc speeds recommended will produce acceptable spacing. Increasing disc speed will cause seed spacing to deteriorate. Reducing disc speed will result in spacing improvement together with lower vacuum requirements.
- 5/. Excessive vacuum requirements normally indicate a problem :-
 - a) Worn or damaged seed discs or air gallery blocks.
 - b) Incorrect hole size in seed discs.
 - c) Excessive disc speed.
 - d) Singulators set too aggressively.

LARKSPUR

Application Rate	Recommended Seed Disc Part No. Description	Typical Vacuum m.b.	Pressure m.b.	Recommended Max. Seed Disc Speed	Special Instructions
25-60 seeds / metre per row	690295B Ø0.8x144x 1 L	50	20% of Vac	25 r.p.m.	Use 11T Unit Drive Shaft sprocket

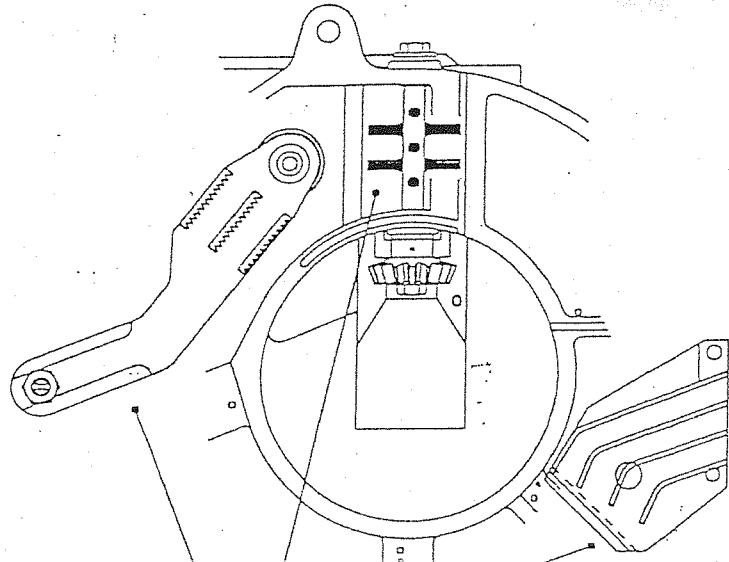


Notes:

- 1/. Use standard singulator for Larkspur.
- 2/. Use standard agitator for Larkspur.
- 3/. Remove plastic seed dividers.
- 4/. The seed disc speeds recommended will produce acceptable spacing. Increasing disc speed will cause seed spacing to deteriorate. Reducing disc speed will result in spacing improvement together with lower vacuum requirements.
- 5/. Excessive vacuum requirements normally indicate a problem :-
 - a) Worn or damaged seed discs or air gallery blocks.
 - b) Incorrect hole size in seed discs.
 - c) Excessive disc speed.
 - d) Singulators set too aggressively.

LEEK - RAW

Spacing Range	Recommended Seed Disc Part No. Description	Typical Vacuum m.b.	Pressure m.b.	Recommended Max. Seed Disc Speed	Special Instructions
Single line 25-89mm (1.0-3.5ins)	6902567 \emptyset 0.8x96x 1 L	50	20% of Vac	25 r.p.m.	Use 11T Unit Drive Shaft Sprocket
33-118mm (1.3-4.7ins)	6902828 \emptyset 0.8x72x 1 L	40	20% of Vac	25 r.p.m.	
50-177mm (2.0-7.0ins)	6902565 \emptyset 0.8x48x 1 L	40	20% of Vac	25 r.p.m.	
Multi-line 50-89mm (2.0-3.5ins)	6902629 \emptyset 0.8x96x 2 L	40	20% of Vac	12 r.p.m.	Use 11T Unit Drive Shaft Sprocket
67-118mm (2.6-4.6ins)	6902930 \emptyset 0.8x72x 2 L	40	20% of Vac	12 r.p.m.	
108-177mm (4.2-7.0ins)	6902646 \emptyset 0.8x48x 2 L	40	20% of Vac	12 r.p.m.	

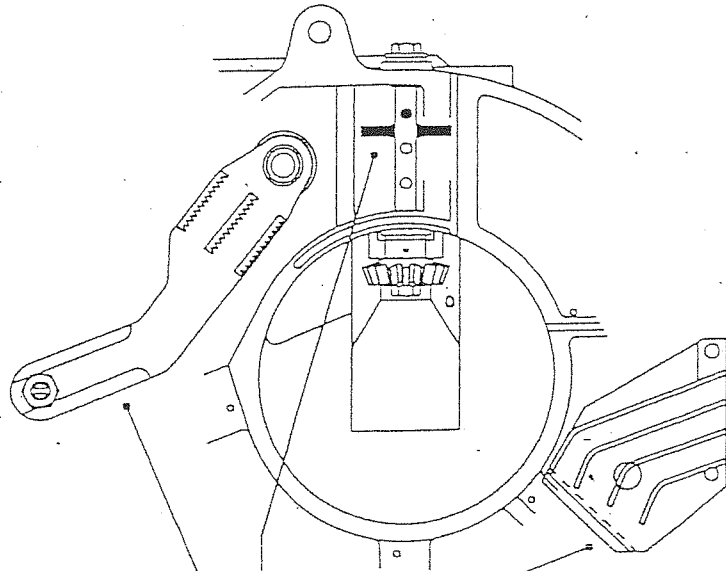


- Notes:
- 1/. Use standard singulator for raw leek.
 - 2/. Use standard agitator for raw leek.
 - 3/. Remove plastic seed dividers for single line work.
 - 4/. The seed disc speeds recommended will produce acceptable spacing. Increasing disc speed will cause seed spacing to deteriorate. Reducing disc speed will result in spacing improvement together with lower vacuum requirements.
 - 5/. Excessive vacuum requirements normally indicate a problem: -
 - a) Worn or damaged seed discs or air gallery blocks.
 - b) Incorrect hole size in seed discs.
 - c) Excessive disc speed.
 - d) Singulators set too aggressively.
 - 6/. If very small seed is found to be difficult to single on a \emptyset 0.8 hole, a disc with \emptyset 0.6 holes should be used.

LEEK - PELLETTED

3.0 - 3.5mm : NOT POLYMER COATED : APPROX. 560/10g
 HEAVIER SEED WILL REQUIRE HIGHER VACUUM LEVELS.
 FINAL VACUUM ADJUSTMENT TO BE MADE WHEN DISCS ARE PRIMED WITH SEED.

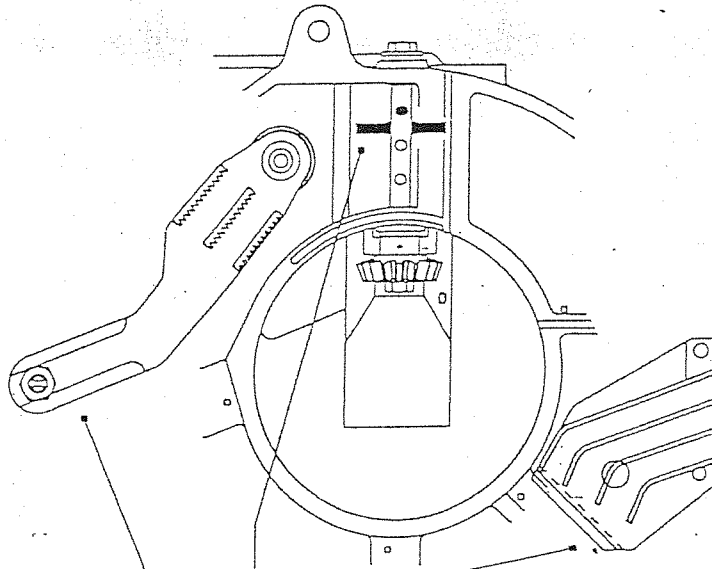
Spacing Range	Recommended Seed Disc Part No.	Description	Typical Vacuum m.b.	Pressure m.b.	Recommended Max. Seed Disc Speed	Special Instructions
Single line 25-89mm (1.0-3.5ins)	6903144	Ø1.6x96x 1 L	70	20% of Vac	25 r.p.m.	Use 11T Unit Drive Shaft Sprocket
33-118mm (1.3-4.7ins)	6903209	Ø1.6x72x 1 L	70	20% of Vac	25 r.p.m.	
50-177mm (2.0-7.0ins)	6903210	Ø1.6x48x 1 L	60	20% of Vac	25 r.p.m.	
Multi-line 50-89mm (2.0-3.5ins)	6903211	Ø1.6x96x 2 L	40	20% of Vac	12 r.p.m.	Use 11T Unit Drive Shaft Sprocket
67-120mm (2.6-4.7ins)	6903157	Ø1.6x72x 2 L	40	20% of Vac	12 r.p.m.	
108-177mm (4.2-7.0ins)	6902821	Ø1.6x48x 2 L	40	20% of Vac	12 r.p.m.	



- Notes:
- 1/. Use standard singulator for pelleted leek.
 - 2/. Use agitator with only 2 fingers fitted where shown for pelleted leek.
 - 3/. Remove plastic seed dividers for single line work.
 - 4/. The seed disc speeds recommended will produce acceptable spacing. Increasing disc speed will cause seed spacing to deteriorate. Reducing disc speed will result in spacing improvement together with lower vacuum requirements.
 - 5/. Excessive vacuum requirements normally indicate a problem :-
 - a) Worn or damaged seed discs or air gallery blocks.
 - b) Incorrect hole size in seed discs.
 - c) Excessive disc speed.
 - d) Singulators set too aggressively.

LETTUCE - RAW

Spacing Range	Recommended Seed Disc Part No. Description	Typical Vacuum m.b.	Pressure m.b.	Recommended Max. Seed Disc Speed	Special Instructions
Single line					
50-177mm (2.0-7.0ins)	6902488 Ø0.5x48x 1 L	40	20% of Vac	25 r.p.m.	Use 11T Unit Drive Shaft Sprocket
99-354mm (3.9-14.0ins)	6903150 Ø0.5x24 Groups of 2	40	20% of Vac	25 r.p.m.	
99-354mm (3.9-14.0ins)	6902489 Ø0.5x24x 1 L	40	20% of Vac	25 r.p.m.	
200-700mm (7.8-27.0ins)	6902970 Ø0.5x12 Groups of 3	40	20% of Vac	25 r.p.m.	

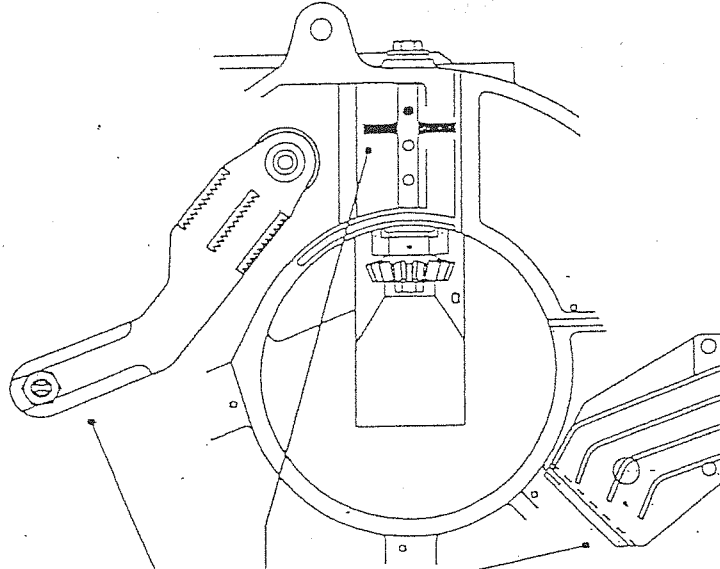


Notes:

- 1/ Use standard singulator for Lettuce.
- 2/ Use agitator with only 2 fingers where shown for Lettuce.
- 3/ Remove plastic dividers.
- 4/ The seed disc speeds recommended will produce acceptable spacing. Increasing disc speed will cause seed spacing to deteriorate. **Reducing disc speed will result in spacing improvement together with lower vacuum requirements.**
 - a) Excessive vacuum requirements normally indicate a problem :-
 - b) Worn or damaged seed discs or air gallery blocks.
 - c) Incorrect hole size in seed discs.
 - d) Excessive disc speed.
- 5/ Singulators set too aggressively.

LEAF LETTUCE - RAW

Spacing Range	Recommended Seed Disc Part No. Description	Typical Vacuum m.b.	Pressure m.b.	Recommended Max. Seed Disc Speed	Special Instructions
Single line 17-61mm (0.7-2.4ins)	6902532 Ø0.5x96x 1 L	50	20% of Vac	25 r.p.m.	Use 11T Unit Drive Shaft Sprocket
Multi-line 17-61mm (0.7-2.4ins)	6902558 Ø0.5x96x 2 L	50	20% of Vac	25 r.p.m.	Use 11T Unit Drive Shaft Sprocket



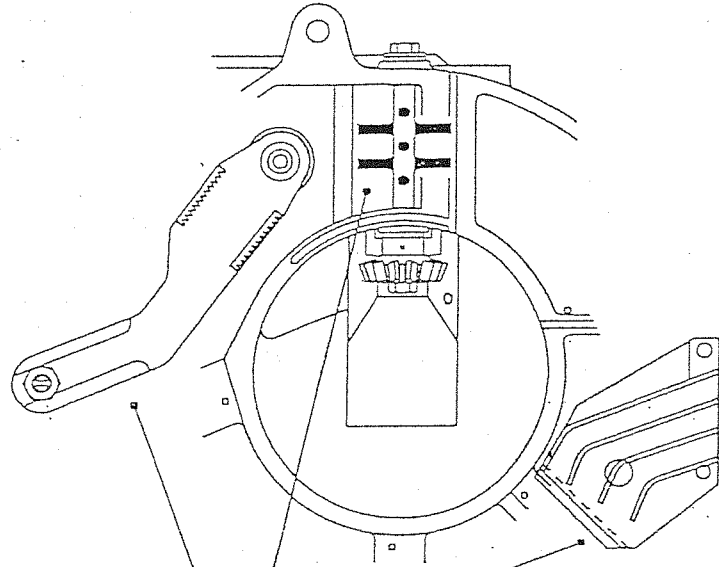
Notes:

- 1/. Use standard singulator for Leaf Lettuce.
- 2/. Use agitator with only 2 fingers where shown for Leaf Lettuce.
- 3/. Fit lettuce seed dividers for multi line. Remove dividers for single line.
- 4/. The seed disc speeds recommended will produce acceptable spacing. Increasing disc speed will cause seed spacing to deteriorate. Reducing disc speed will result in spacing improvement together with lower vacuum requirements.
- 5/. Excessive vacuum requirements normally indicate a problem :-
 - a) Worn or damaged seed discs or air gallery blocks.
 - b) Incorrect hole size in seed discs.
 - c) Excessive disc speed.
 - d) Singulators set too aggressively.

MELON



Spacing Range	Recommended Seed Disc Part No. Description	Typical Vacuum m.b.	Pressure m.b.	Recommended Max. Seed Disc Speed	Special Instructions
Single line 99-354mm (3.9-14.0ins)	6903212 Ø2.0x24x 1 L	60	20% of Vac	25 r.p.m.	Use 11T Unit Drive Shaft Sprocket



Notes:

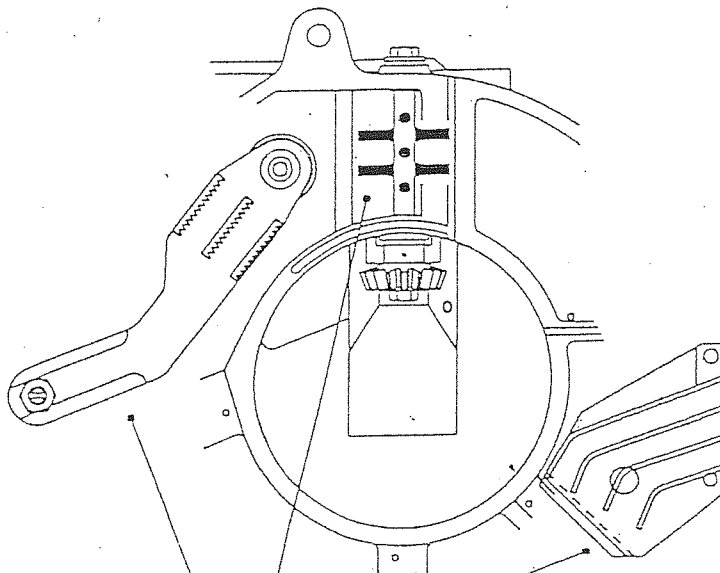
- 1/. Use single line singulator for melon.
- 2/. Use standard agitator for melon.
- 3/. Remove plastic seed dividers.
- 4/. The seed disc speeds recommended will produce acceptable spacing. Increasing disc speed will cause seed spacing to deteriorate. Reducing disc speed will result in spacing improvement together with lower vacuum requirements.
- 5/. Excessive vacuum requirements normally indicate a problem: -
 - a) Worn or damaged seed discs or air gallery blocks.
 - b) Incorrect hole size in seed discs.
 - c) Excessive disc speed.
 - d) Singulators set too aggressively.

MUSTARD

- 1.5 - 1.75mm

LARGER SEED WILL NEED HIGHER VACUUM LEVELS

Spacing Range	Recommended Seed Disc Part No. Description	Typical Vacuum m.b	Pressure m.b.	Recommended Max. Seed Disc Speed	Special Instructions
Single line 25-89mm (1.0-3.5ins)	6902566 Ø0.6x96x 1 L	60	20% of Vac	25 r.p.m.	Use 1 1/2" Unit Drive Shaft Sprocket

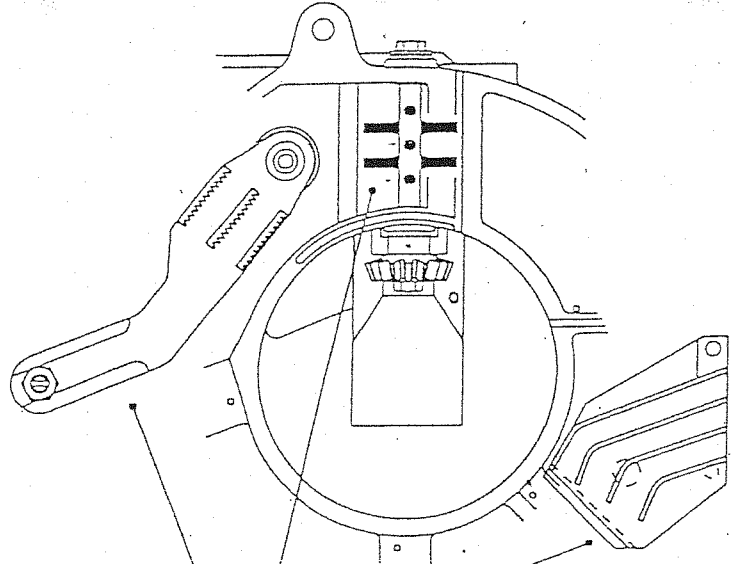


Notes:

- 1/. Use standard singulator for mustard.
- 2/. Use standard agitator for mustard.
- 3/. Remove plastic seed dividers.
- 4/. The seed disc speeds recommended will produce acceptable spacing. Increasing disc speed will cause seed spacing to deteriorate. Reducing disc speed will result in spacing improvement together with lower vacuum requirements.
- 5/. Excessive vacuum requirements normally indicate a problem :-
 - a) Worn or damaged seed discs or air gallery blocks.
 - b) Incorrect hole size in seed discs.
 - c) Excessive disc speed.
 - d) Singulators set too aggressively.

NIGELLA BLACK POD

Application Rate	Recommended Seed Disc Part No. Description	Typical Vacuum m.b.	Pressure m.b.	Recommended Max. Seed Disc Speed	Special Instructions
16-58 seeds / metre per row	6902567 \varnothing 0.8x96x 1 L	40	20% of Vac	25 r.p.m.	Use 16T Unit Drive Shaft Sprocket

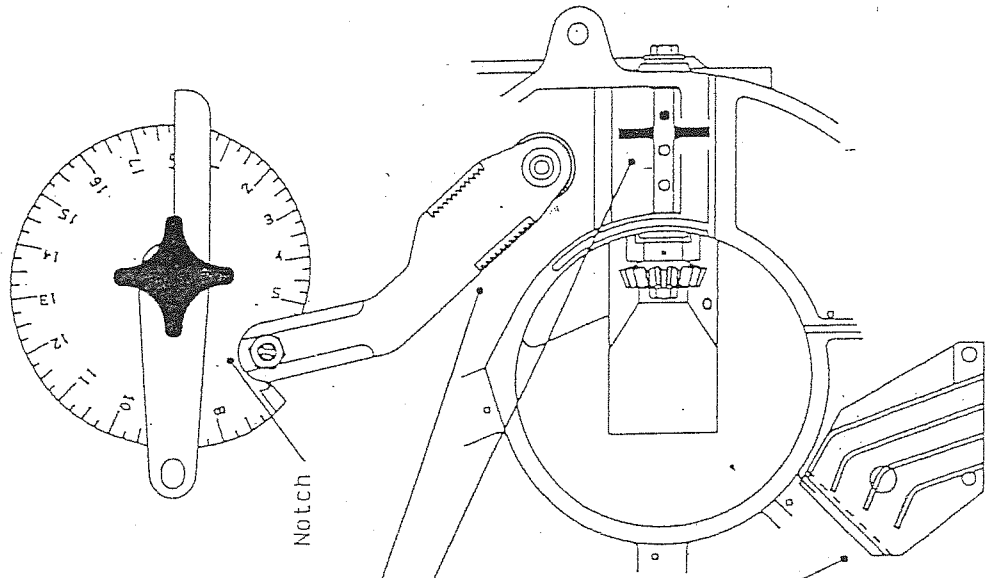


Notes:

- 1/. Use standard singulator for Nigella Black Pod.
- 2/. Use standard agitator for Nigella Black Pod.
- 3/. Remove plastic seed dividers.
- 4/. The seed disc speeds recommended will produce acceptable spacing. Increasing disc speed will cause seed spacing to deteriorate. Reducing disc speed will result in spacing improvement together with lower vacuum requirements.
- 5/. Excessive vacuum requirements normally indicate a problem: -
 - a) Worn or damaged seed discs or air gallery blocks.
 - b) Incorrect hole size in seed discs.
 - c) Excessive disc speed.
 - d) Singulators set too aggressively.

NIGELLA ORIENTALIS

Application Rate	Recommended Seed Disc Part No.	Recommended Seed Disc Description	Typical Vacuum m.b.	Pressure m.b.	Recommended Seed Disc Speed	Special Instructions
12-43 seeds / metre per row	6903241	Ø1.2x72x 1 L	60	20% of Vac	25 r.p.m.	Use 16T Unit Drive Shaft Sprocket
8-29 seeds / metre per row	6902626	Ø1.2x48x 1 L	60	20% of Vac	25 r.p.m.	

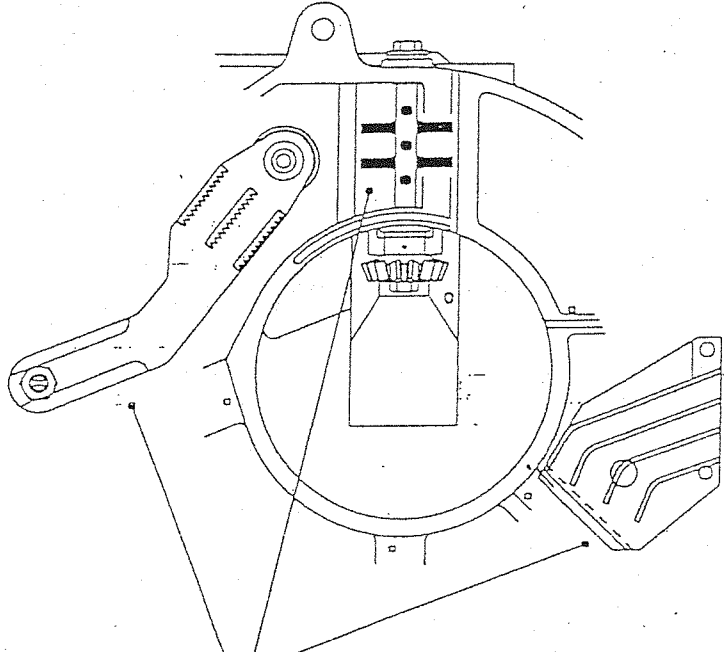


Notes:

- 1/. Fit single line singulator and set in notch - as shown.
- 2/. Use agitator with only 2 fingers for Nigella Orientalis.
- 3/. Remove plastic seed dividers.
- 4/. 25 r.p.m. must be adhered to.
- 5/. Excessive vacuum requirements normally indicate a problem: -
 - a) Worn or damaged seed discs or air gallery blocks.
 - b) Incorrect hole size in seed disc.
- 6/. For higher application rates a 23 tooth unit drive should be used.

ONION - RAW

Spacing Range	Recommended Seed Disc Part No. Description	Typical Vacuum m.b.	Pressure m.b.	Recommended Max. Seed Disc Speed	Special Instructions
High Density - Green; Salad Good even distribution required. Exact seed spacing unnecessary. See Seed Spacing Charts for Seed Disc Selection.	6902958 Ø0.8x144x 1 L	70	20% of Vac	40 r.p.m.	Use 16T Unit Drive Shaft Sprocket
	6903007 Ø0.8x144x 2 L	70	20% of Vac	40 r.p.m.	
	6903164 Ø0.8x144x 3 L	70	20% of Vac	40 r.p.m.	
	6902567 Ø0.8x96x 1 L	70	20% of Vac	40 r.p.m.	
	6902629 Ø0.8x96x 2 L	70	20% of Vac	40 r.p.m.	
	6902647 Ø0.8x96x 3 L	70	20% of Vac	40 r.p.m.	
	6902567 Ø0.8x96x 1 L	50	20% of Vac	25 r.p.m.	
	6902565 Ø0.8x48x 1 L	40	20% of Vac	25 r.p.m.	
	6903007 Ø0.8x144x 2 L	50	20% of Vac	12 r.p.m.	
	6903164 Ø0.8x144x 3 L	50	20% of Vac	12 r.p.m.	
Single line 25-89mm (1.0-3.5ins) 50-177mm (2.0-7.0ins) Multi-line 40-60mm (1.6-2.3ins) 43-71mm (1.7-2.8ins) 50-89mm (2.0-3.5ins) 67-120mm (2.6-4.7ins) 108-177mm (4.2-7.0ins)	6903156 Ø0.8x120x 2 L	40	20% of Vac	12 r.p.m.	Use 11T Unit Drive Shaft Sprocket
	6902529 Ø0.8x96x 2 L	40	20% of Vac	12 r.p.m.	
	6902647 Ø0.8x96x 3 L	40	20% of Vac	12 r.p.m.	
	6902930 Ø0.8x72x 2 L	40	20% of Vac	12 r.p.m.	
	6902646 Ø0.8x48x 2 L	40	20% of Vac	12 r.p.m.	
	6902562 Ø0.8x48x 3 L	40	20% of Vac	12 r.p.m.	
		40	20% of Vac	12 r.p.m.	
		40	20% of Vac	12 r.p.m.	



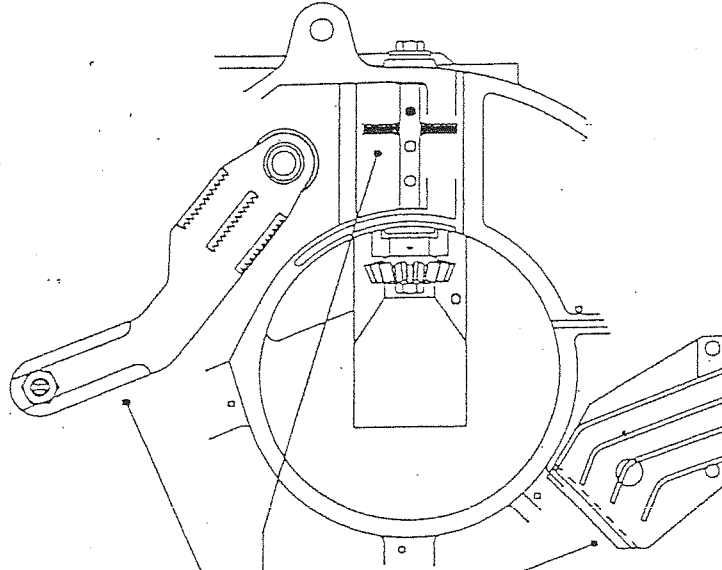
Notes:

- 1/. Use standard singulator for raw onion.
- 2/. Use standard agitator for raw onion.
- 3/. Remove plastic seed dividers for single line work.
- 4/. The seed disc speeds recommended will produce acceptable spacing. Increasing disc speed will cause seed spacing to deteriorate. Reducing disc speed will result in spacing improvement together with lower vacuum requirements.
- 5/. Excessive vacuum requirements normally indicate a problem: -
 - a) Worn or damaged seed discs or air gallery blocks.
 - b) Incorrect hole size in seed discs.
 - c) Excessive disc speed.
 - d) Singulators set too aggressively.

ONION - PELLETTED

3.0 - 3.5mm : NOT POLYMER COATED : APPROX. 550/10g
HEAVIER SEED WILL REQUIRE HIGHER VACUUM LEVELS.
FINAL VACUUM ADJUSTMENT TO BE MADE WHEN DISCS ARE PRIMED WITH SEED.

Spacing Range	Recommended Seed Disc Part No.	Recommended Seed Disc Description	Typical Vacuum m.b.	Pressure m.b.	Recommended Max. Seed Disc Speed	Special Instructions
Single line 25-89mm (1.0-3.5ins) 33-118mm (1.3-4.7ins) 50-177mm (2.0-7.0ins)	6903144	Ø1.6x96x 1 L	70	20% of Vac	25 r.p.m.	Use 11T Unit Drive Shaft Sprocket
	6903209	Ø1.6x72x 1 L	70	20% of Vac	25 r.p.m.	
	6903210	Ø1.6x48x 1 L	60	20% of Vac	25 r.p.m.	
Multi-line 50-89mm (2.0-3.5ins) 67-120mm (2.6-4.7ins) 108-177mm (4.2-7.0ins)	6903211	Ø1.6x96x 2 L	40	20% of Vac	12 r.p.m.	Use 11T Unit Drive Shaft Sprocket
	6903157	Ø1.6x72x 2 L	40	20% of Vac	12 r.p.m.	
	6902821	Ø1.6x48x 2 L	40	20% of Vac	12 r.p.m.	



Notes:

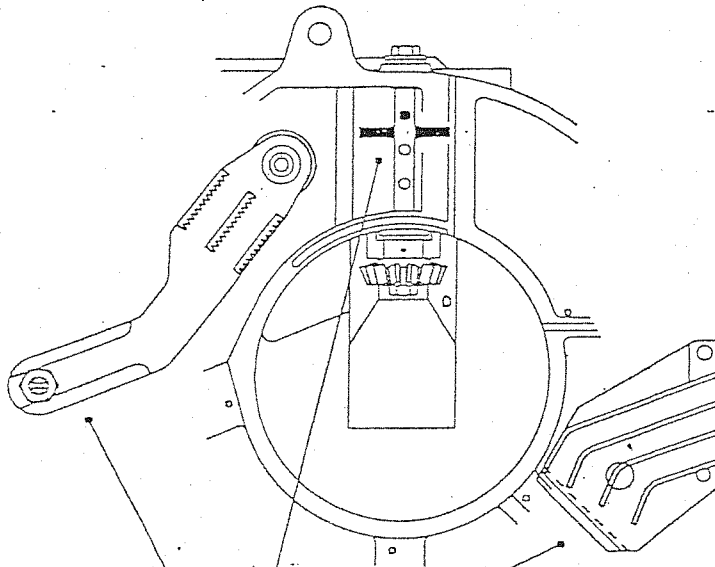
- 1/. Use standard singulator for pelleted onion.
- 2/. Use agitator with only 2 fingers fitted where shown for pelleted onion.
- 3/. Remove plastic seed dividers for single line work.
- 4/. The seed disc speeds recommended will produce acceptable spacing.
Increasing disc speed will cause seed spacing to deteriorate.

Reducing disc speed will result in spacing improvement together with lower vacuum requirements*.

- 5/. Excessive vacuum requirements normally indicate a problem :-
 - a) Worn or damaged seed discs or air gallery blocks.
 - b) Incorrect hole size in seed discs.
 - c) Excessive disc speed.
 - d) Singulators set too aggressively.

PAPRIKA

Application Rate	Recommended Seed Disc Part No. Description	Typical Vacuum m.b.	Pressure m.b.	Recommended Max. Seed Disc Speed	Special Instructions
Single line 50-177mm (2.0-7.0ins)	6902625 Ø1.0x48x 1 L	60	20% of Vac	25 r.p.m.	Use 11T Unit Drive Shaft Sprocket

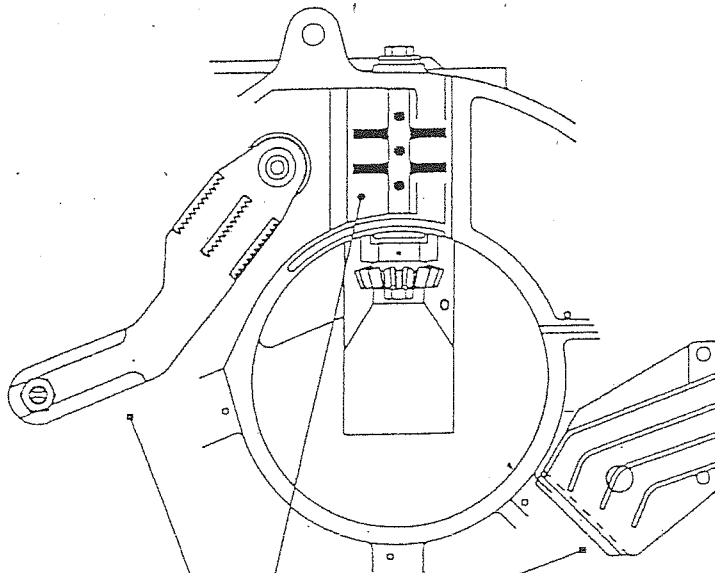


Notes:

- 1/. Use standard singulator for Paprika.
- 2/. Use agitator with only 2 fingers where shown for Paprika.
- 3/. Remove plastic seed dividers.
- 4/. The seed disc speeds recommended will produce acceptable spacing. Increasing disc speed will cause seed spacing to deteriorate. Reducing disc speed will result in spacing improvement together with lower vacuum requirements.
- 5/. Excessive vacuum requirements normally indicate a problem :-
 - a) Worn or damaged seed discs or air gallery blocks.
 - b) Incorrect hole size in seed discs.
 - c) Excessive disc speed.
 - d) Singulators set too aggressively.

PARSLEY

Spacing Range	Recommended Seed Disc Part No. Description	Typical Vacuum m.b.	Pressure m.b.	Recommended Max. Seed Disc Speed	Special Instructions
Multi-line 17-59mm (0.7-2.3ins)	6902667 Ø0.6x144x 3 L	50	20% of Vac	25 r.p.m.	Use 11T Unit Drive Shaft Sprocket

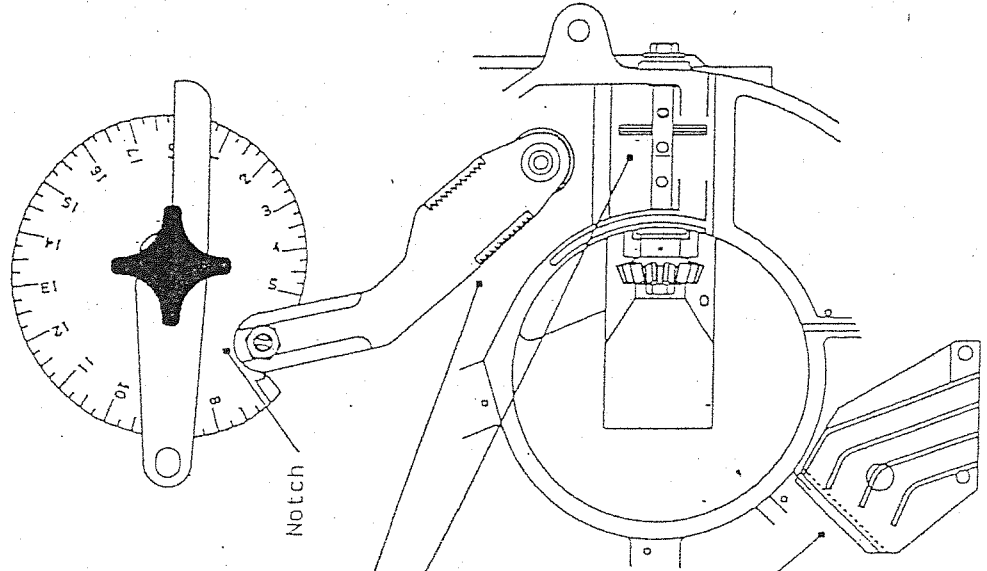


Notes:

- 1/. Use standard singulator for parsley.
- 2/. Use standard agitator for parsley.
- 3/. Remove plastic seed dividers for single line work.
- 4/. The seed disc speeds recommended will produce acceptable spacing. Increasing disc speed will cause seed spacing to deteriorate. Reducing disc speed will result in spacing improvement together with lower vacuum requirements.
- 5/. Excessive vacuum requirements normally indicate a problem :-
 - a) Worn or damaged seed discs or air gallery blocks.
 - b) Incorrect hole size in seed discs.
 - c) Excessive disc speed.
 - d) Singulators set too aggressively.

PARSNIP - RAW

Spacing Range	Recommended Seed Disc Part No. Description	Typical Vacuum m.b.	Pressure m.b.	Recommended Seed Disc Speed	Special Instructions
Single line 33-118mm (1.3-4.7ins)	6902828 Ø0.8x72x 1 L	40-60	20% of Vac	25 r.p.m.	Use 11T Unit Drive Shaft Sprocket
50-177mm (2.0-7.0ins)	6902565 Ø0.8x48x 1 L	40-60	20% of Vac	25 r.p.m.	

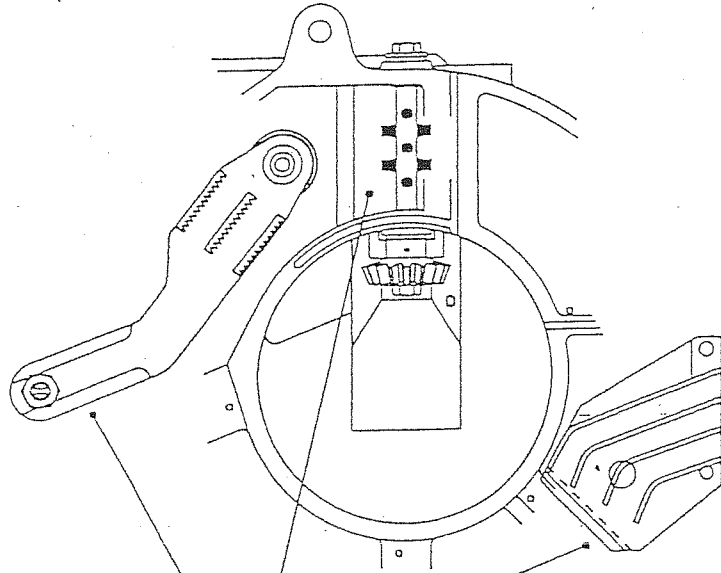


Notes:

- 1/. Fit single line singulator and set in notch - as shown.
- 2/. Fit Parsnip agitator - 2 tension pins as shown.
- 3/. Remove plastic seed dividers.
- 4/. 25 r.p.m. must be adhered to.
- 5/. Adjust vacuum levels between 40 and 60 m.b. until best results are obtained on disc.
- 6/. Excessive vacuum requirements normally indicate a problem: -
 - a) Worn or damaged seed discs or air gallery blocks.
 - b) Incorrect hole size in seed disc.

ENCRUSTED PARSNIP / PROCOAT - FINAL VACUUM ADJUSTMENT TO MADE WHEN DISCS ARE PRIMED WITH SEED.

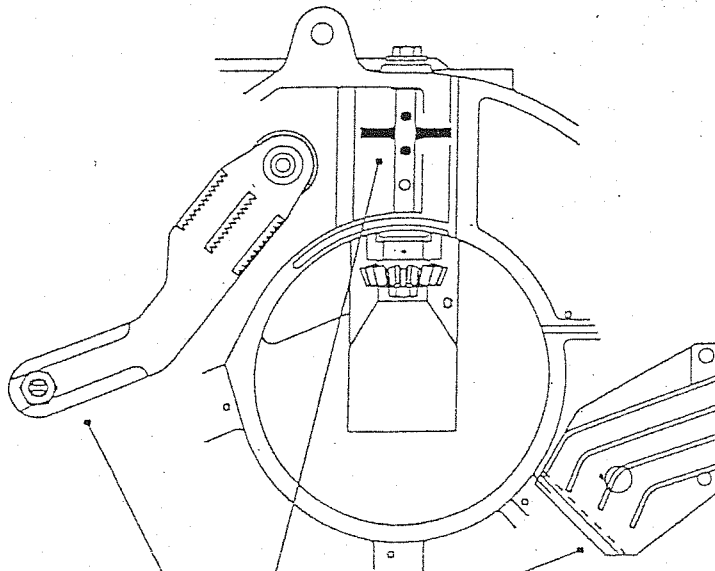
Spacing Range	Recommended Seed Disc Part No. Description	Typical Vacuum m.b.	Pressure m.b.	Recommended Max. Seed Disc Speed	Special Instructions
Single line 50-177mm (2.0-7.0ins)	6902956 Ø2.2x48x 1 L	50	20% of Vac	25 r.p.m.	Use 11T Unit Drive Shaft Sprocket.
Multi-line 50-177mm (2.0-7.0ins)	6902693 Ø2.2x48x 2 L	50	20% of Vac	25 r.p.m.	Use 11T Unit Drive Shaft Sprocket



- Notes:
- 1/. Use standard singulator for encrusted parsnip.
 - 2/. Use pelleted agitator for encrusted parsnip.
 - 3/. Remove plastic seed dividers for single line work.
 - 4/. The seed disc speeds recommended will produce acceptable spacing. Increasing disc speed will cause seed spacing to deteriorate. Reducing disc speed will result in spacing improvement together with lower vacuum requirements.
 - 5/. Excessive vacuum requirements normally indicate a problem :-
 - a) Worn or damaged seed discs or air gallery blocks.
 - b) Incorrect hole size in seed discs.
 - c) Excessive disc speed.
 - d) Singulators set too aggressively.

PARSNIP - PELLETTED - LIGHTWEIGHT MINIMUM COATED.
FINAL VACUUM ADJUSTMENT TO BE MADE WHEN DISCS ARE PRIMED WITH SEED.

Spacing Range	Recommended Seed Disc Part No. Description	Typical Vacuum m.b.	Pressure m.b. of Vac	Recommended Max. Seed Disc Speed	Special Instructions
Single line 50-177mm (2.0-7.0ins)	6902956 Ø2.2x48x 1 L	50	20% of Vac	25 r.p.m.	Use 11T Unit Drive Shaft Sprocket
Multi-line 50-177mm (2.0-7.0ins)	6902693 Ø2.2x48x 2 L	50	20% of Vac	25 r.p.m.	Use 11T Unit Drive Shaft Sprocket



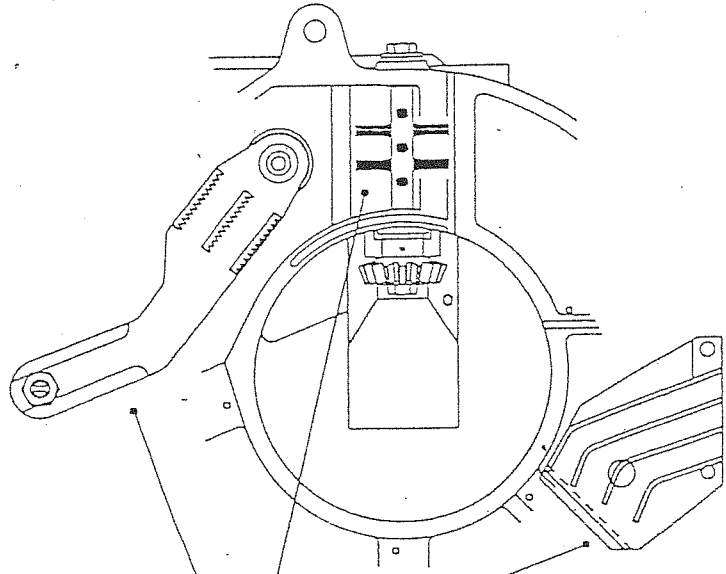
- Notes:
- 1/ Use standard singulator for pelleted parsnip.
 - 2/ Use agitator with only 3 fingers where shown for pelleted parsnip.
 - 3/ Remove plastic seed dividers for single line work.
 - 4/ The seed disc speeds recommended will produce acceptable spacing. Increasing disc speed will cause seed spacing to deteriorate. Reducing disc speed will result in spacing improvement together with lower vacuum requirements.
 - 5/ Excessive vacuum requirements normally indicate a problem :-
 - a) Worn or damaged seed discs or air gallery blocks.
 - b) Incorrect hole size in seed discs.
 - c) Excessive disc speed.
 - d) Singulators set too aggressively.

PINUS RADIATA



Spacing Range	Recommended Seed Disc Part No. Description	Typical Vacuum m.b.	Pressure m.b. of Vac	Recommended Max. Seed Disc Speed	Special Instructions
Multi-line 89-177mm (3.5-7.0ins)	6902535 Ø2.0x48x 2 L	50	20% of Vac	12 r.p.m.	Use 11T Unit Drive Shaft Sprocket

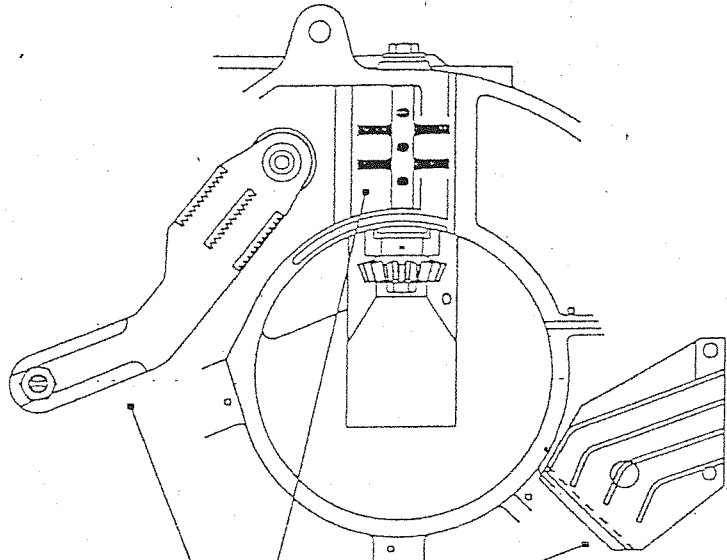
Typical seed spacing 9cm down row in each line - Gear D17.
Use 125mm x 2 line Hyline coulters.



- Notes:
- 1/. Use standard singulator for Pinus Radiata.
 - 2/. Use standard agitator for Pinus Radiata.
 - 3/. Remove plastic seed dividers for single line work.
 - 4/. The seed disc speeds recommended will produce acceptable spacing. Increasing disc speed will cause seed spacing to deteriorate. Reducing disc speed will result in spacing improvement together with lower vacuum requirements.
 - 5/. Excessive vacuum requirements normally indicate a problem :-
 - a) Worn or damaged seed discs or air gallery blocks.
 - b) Incorrect hole size in seed discs.
 - c) Excessive disc speed.
 - d) Singulators set too aggressively.

POPPY

Spacing Range	Recommended Seed Disc Part No. Description	Typical Vacuum m.b.	Pressure m.b. 20% of Vac	Recommended Max. Seed Disc Speed 25 r.p.m.	Special Instructions Use 11T Unit Drive Shaft Sprocket
Single line 25-89mm (1.0-3.5ins)	6902532 Ø0.5x96x 1 L	50			

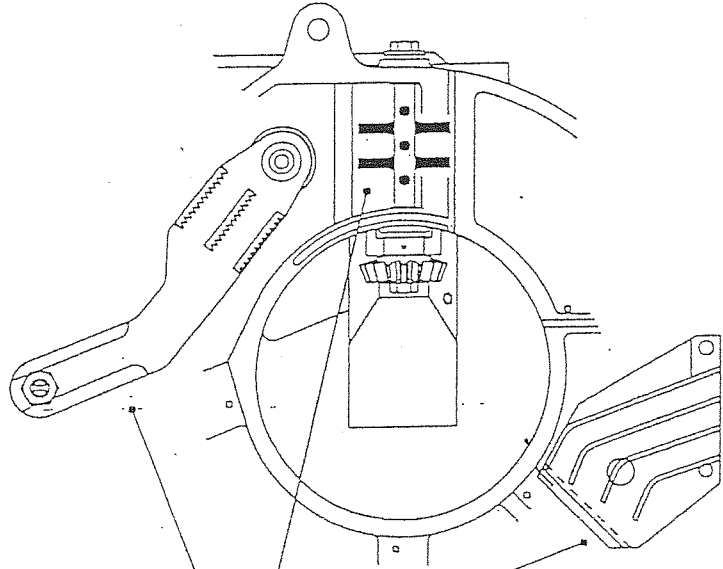


Notes:

- 1/. Use standard singulator for poppy.
- 2/. Use standard agitator for poppy.
- 3/. Remove plastic seed dividers.
- 4/. The seed disc speeds recommended will produce acceptable spacing. Increasing disc speed will cause seed spacing to deteriorate. Reducing disc speed will result in spacing improvement together with lower vacuum requirements.
- 5/. Excessive vacuum requirements normally indicate a problem :-
 - a) Worn or damaged seed discs or air gallery blocks.
 - b) Incorrect hole size in seed discs.
 - c) Excessive disc speed.
 - d) Singulators set too aggressively.

RADISH

Spacing Range	Recommended Seed Disc Part No. Description	Typical Vacuum m.b.	Pressure m.b.	Recommended Max. Seed Disc Speed	Special Instructions
Single line 25-89mm (1.0-3.5ins)	6902975 Ø1.4x96x 1 L	50	20% of Vac	25 r.p.m.	Use 11T Unit Drive Shaft Sprocket
Multi-line 25-89mm (1.0-3.5mm)	6903139 Ø1.4x96x 2 L	50	20% of Vac	25 r.p.m.	Use 11T Unit Drive Shaft Sprocket



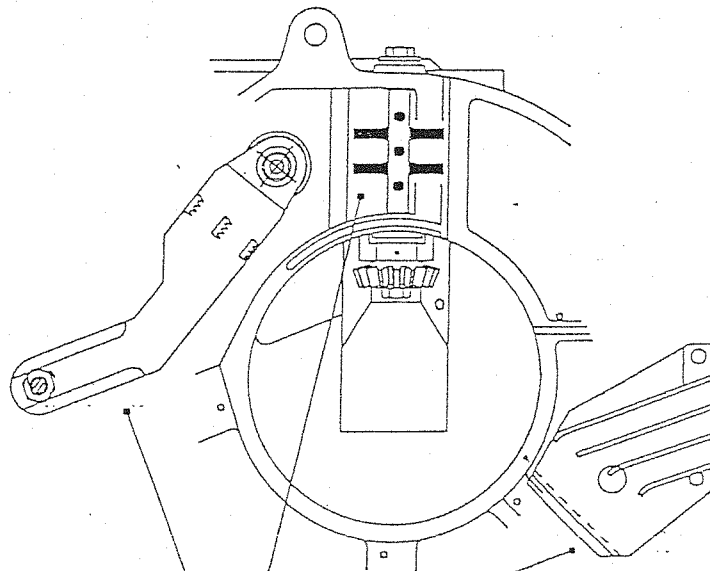
Notes:

- 1/. Use standard singulator for radish.
- 2/. Use standard agitator for radish.
- 3/. Remove plastic seed dividers for single line work.
- 4/. The seed disc speeds recommended will produce acceptable spacing. Increasing disc speed will cause seed spacing to deteriorate.
Reducing disc speed will result in spacing improvement together with lower vacuum requirements.
- 5/. Excessive vacuum requirements normally indicate a problem :-
 - a) Worn or damaged seed discs or air gallery blocks.
 - b) Incorrect hole size in seed discs.
 - c) Excessive disc speed.
 - d) Singulators set too aggressively.

RED BEET

Spacing Range	Recommended Seed Disc Part No. Description	Typical Vacuum m.b.	Pressure m.b.	Recommended Max. Seed Disc Speed	Special Instructions
Single line 50-177mm (2.0-7.0ins)	6903210 ϕ 1.6x48x 1 L	50	20% of Vac	25 r.p.m.	Use 11T Unit Drive Shaft Sprocket
Multi line 50-177mm (2.0-7.0ins)	6902821 ϕ 1.6x48x 2 L 6903273 ϕ 1.6x48x 3 L	50	20% of Vac	25 r.p.m.	Use 11T Unit Drive Shaft Sprocket

Note: Seed Discs with ϕ 1.6 holes are recommended for most seed varieties although for very small seed a ϕ 1.4 hole size may be more suitable. If vacuum levels greater than 60 m.b. are required to obtain a full Seed Disc this indicates the holes are too small.



Notes:

- 1/. Use Red Beet singulator for red beet. (part no. 7704026)
- 2/. Use standard agitator for red beet.
- 3/. Use Red Beet seed dividers for multi-line work. (part no. 6903213)
- 4/. Remove seed dividers for single line work.
- 5/. The seed disc speeds recommended will produce acceptable spacing. Increasing disc speed will cause seed spacing to deteriorate. Reducing disc speed will result in spacing improvement together with lower vacuum requirements.
- 6/. Excessive vacuum requirements normally indicate a problem :-
 - a) Worn or damaged seed discs or air gallery blocks.
 - b) Incorrect hole size in seed discs.
 - c) Excessive disc speed.
 - d) Singulators set too aggressively.

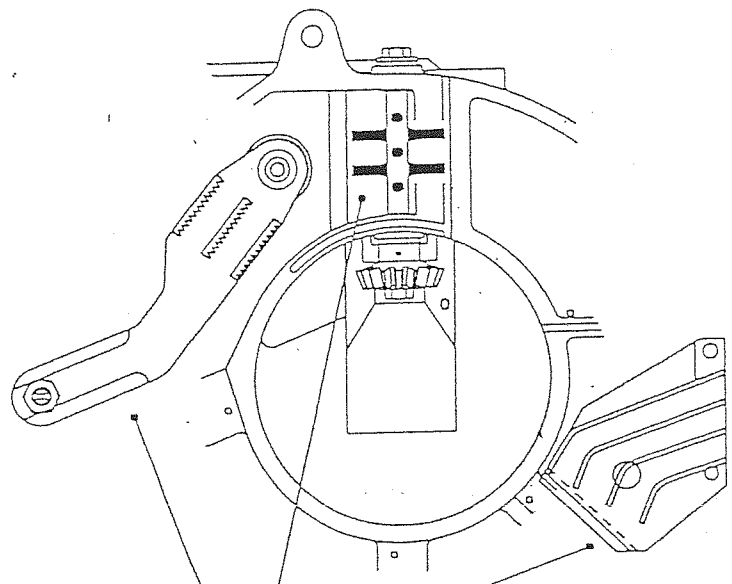
NOTE: -A conversion kit (part no. 8003674) is available. This consists of Singulator, Splitter & fasteners. See page 14 calibration of new singulators.

SPINACH -- RAW

SEED SHOULD BE DE-HORNED & CLEAN

FINAL VACUUM ADJUSTMENT TO BE MADE WHEN DISCS ARE PRIMED WITH SEED

Spacing Range	Recommended Seed Disc Part No. Description	Typical Vacuum m.b.	Pressure m.b.	Recommended Max. Seed Disc Speed	Special Instructions
Single line 25-89mm (1.0-3.5ins)	6902975 Ø1.4x96x 1 L	60	20% of Vac	25 r.p.m.	Use 11T Unit Drive Shaft Sprocket
Multi-line 25-89mm (1.0-3.5ins)	6903139 Ø1.4x96x 2 L	60	20% of vac	25 r.p.m.	Use 11T Unit Drive Shaft Sprocket



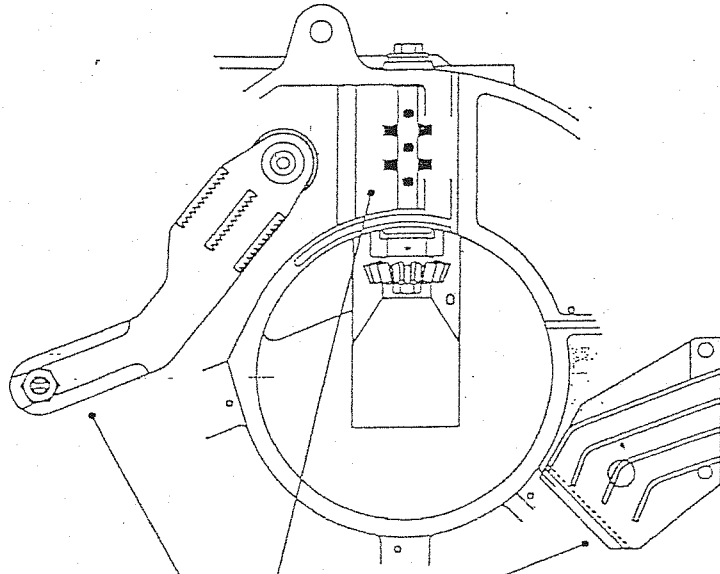
- Notes:
- 1/ Use standard singulator for raw spinach.
 - 2/ Use standard agitator for raw spinach.
 - 3/ Remove plastic seed dividers for single line work.
 - 4/ The seed disc speeds recommended will produce acceptable spacing. Increasing disc speed will cause seed spacing to deteriorate. Reducing disc speed will result in spacing improvement together with lower vacuum requirements.
 - 5/ Excessive vacuum requirements normally indicate a problem :-
 - a) Worn or damaged seed discs or air gallery blocks.
 - b) Incorrect hole size in seed discs.
 - c) Excessive disc speed.
 - d) Singulators set too aggressively.

SUGARBEET - PELLETED

3.5 - 4.75mm

FINAL VACUUM ADJUSTMENTS TO BE MADE WHEN DISCS ARE PRIMED WITH SEED

Spacing Range	Recommended Seed Disc Part No. Description	Typical Vacuum m.b.	Pressure m.b.	Recommended Max. Seed Disc Speed	Special Instructions
Single line 99-354mm (3.9-14.0ins)	6902684 Ø2.5x24x 1 L	40	20% of Vac	25 r.p.m.	Use 11T Unit Drive Shaft Sprocket



Notes:

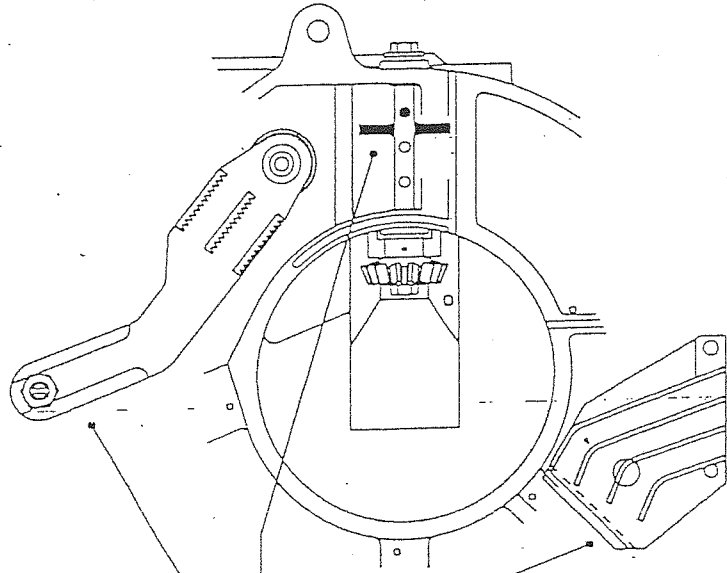
- 1/. Use standard singulator for pelleted sugarbeet.
- 2/. Use pelleted agitator for pelleted sugarbeet.
- 3/. Remove plastic seed dividers.
- 4/. The seed disc speeds recommended will produce acceptable spacing. Increasing disc speed will cause seed spacing to deteriorate. Reducing disc speed will result in spacing improvement together with lower vacuum requirements.
- 5/. Excessive vacuum requirements normally indicate a problem: -
 - a) Worn or damaged seed discs or air gallery blocks.
 - b) Incorrect hole size in seed discs.
 - c) Excessive disc speed.
 - d) Singulators set too aggressively.

SWEDE

1.75 - 2.0mm GRADE H

SEED WILL LEAVE THE DISC AT THE VACUUM RELEASE POINT MORE READILY, IMPROVING SPACING, IF DRESSED WITH FRENCH CHALK.
FINAL VACUUM ADJUSTMENT TO BE MADE WHEN DISCS ARE PRIMED WITH SEED.

Spacing Range	Recommended Seed Disc Part No.	Description	Typical Vacuum m.b.	Pressure m.b.	Recommended Max. Seed Speed	Special Instructions
Single line 50-177mm (2.0-7.0ins)	6902565	Ø0.8x48x 1 L	50	20% of Vac	25 r.p.m.	Use 11T Unit Drive Shaft Sprocket
99-354mm (3.9-14.0ins)	6902643	Ø0.8x24x 1 L	50	20% of Vac	25 r.p.m.	
Multi-line 67-120mm (2.6-4.7ins)	6902930	Ø0.8x72x 2 L	40	20% of Vac	12 r.p.m.	Use 11T Unit Drive Shaft Sprocket
108-177mm (4.2-7.0ins)	6902646	Ø0.8x48x 2 L	30	20% of Vac	12 r.p.m.	
200-354mm (7.9-14.0ins)	6902812	Ø0.8x24x 2 L	30	20% of Vac	12 r.p.m.	

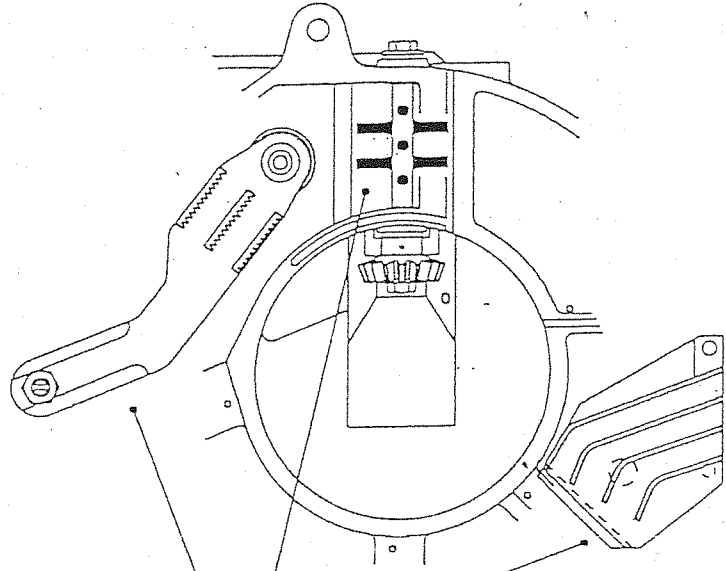


Notes:

- 1/ Use standard singulator for swede.
- 2/ Use agitator with only 2 fingers fitted where shown for swede.
- 3/ Remove plastic seed dividers for single line work.
- 4/ The seed disc speeds recommended will produce acceptable spacing. Increasing disc speed will cause seed spacing to deteriorate. Reducing disc speed will result in spacing improvement together with lower vacuum requirements.
- 5/ Excessive vacuum requirements normally indicate a problem :-
 - a) Worn or damaged seed discs or air gallery blocks.
 - b) Incorrect hole size in seed discs.
 - c) Excessive disc speed.
 - d) Singulators set too aggressively.

SWEET WILLIAM

Spacing Range	Recommended Seed Disc Part No. Description	Typical Vacuum m.b.	Pressure m.b.	Recommended Max. Seed Disc Speed	Special Instructions
Single Line 99-354mm (3.9-14.0ins)	6902566 Ø0.6x24x 1 L	40	20% of Vac	25 r.p.m.	Use 11T Unit Drive Shaft Sprocket

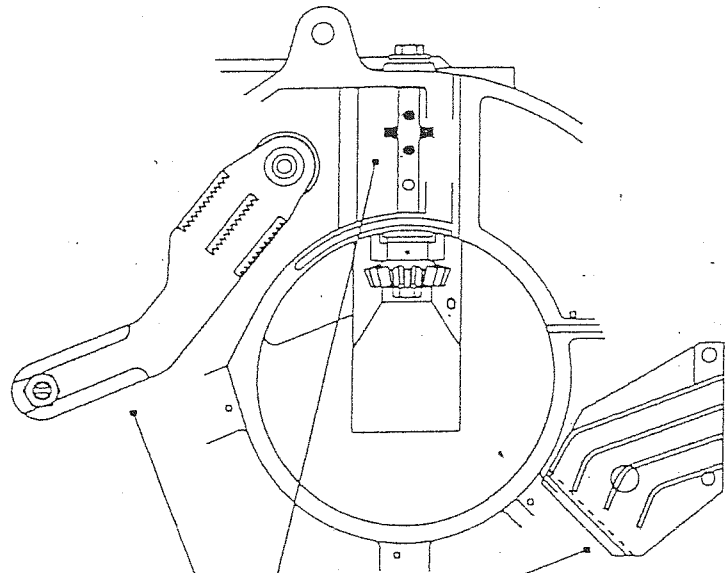


Notes:

- 1/. Use standard singulator for Sweet William.
- 2/. Use standard agitator for Sweet William.
- 3/. Remove plastic seed dividers.
- 4/. The seed disc speeds recommended will produce acceptable spacing. Increasing disc speed will cause seed spacing to deteriorate. Reducing disc speed will result in spacing improvement together with lower vacuum requirements.
- 5/. Excessive vacuum requirements: normally indicate a problem: -
 - a) Worn or damaged seed discs or air gallery blocks.
 - b) Incorrect hole size in seed discs.
 - c) Excessive disc speed.
 - d) Singulators set too aggressively.

TOMATO

Spacing Range	Recommended Seed Disc Part No. Description	Typical Vacuum m.b.	Pressure m.b.	Recommended Max. Seed Disc Speed	Special Instructions
Single line 198-709mm (7.8-27.9ins) 25-89mm (1.0-3.5ins)	6902531 \varnothing 0.7x12 Groups of 3	40	20% of Vac	25 r.p.m.	Use 11T Unit Drive Shaft Sprocket
	6902567 \varnothing 0.6x95x 1 L	40	20% of Vac	25 r.p.m.	



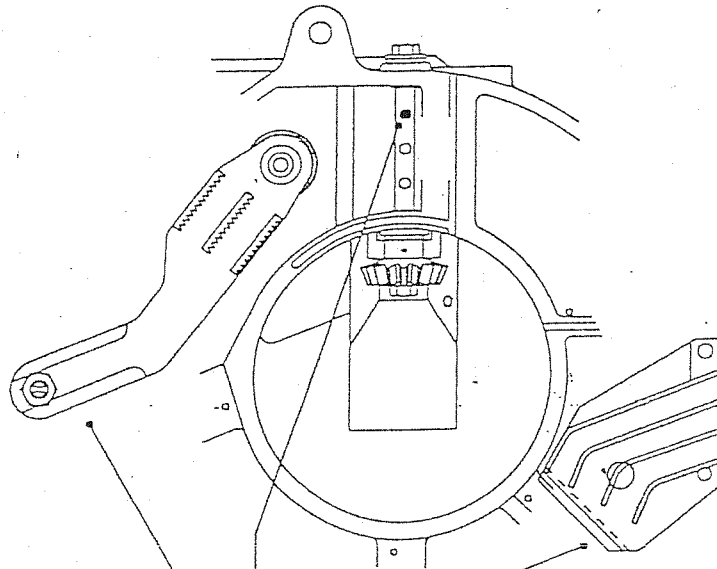
Notes:

- 1/. Use standard singulator for tomato.
- 2/. Use pelleted agitator with only 3 fingers where shown for tomato.
- 3/. Remove plastic seed dividers.
- 4/. The seed disc speeds recommended will produce acceptable spacing. Increasing disc speed will cause seed spacing to deteriorate. Reducing disc speed will result in spacing improvement together with lower vacuum requirements.
- 5/. Excessive vacuum requirements normally indicate a problem: -
 - a) Worn or damaged seed discs or air gallery blocks.
 - b) Incorrect hole size in seed discs.
 - c) Excessive disc speed.
 - d) Singulators set too aggressively.

TURNIP - COATED

SEED WILL LEAVE THE DISC AT THE VACUUM RELEASE POINT MORE READILY, IMPROVING SPACING. IF DRESSED WITH FRENCH CHALK.
FINAL VACUUM ADJUSTMENT TO BE MADE WHEN DISCS ARE PRIMED WITH SEED.

Spacing Range	Recommended Seed Disc Part No.	Description	Typical Vacuum m.b.	Pressure m.b.	Recommended Max. Seed Disc Speed	Special Instructions
Single line 50-177mm (2.0-7.0ins)	6902565	Ø0.8x48x 1 L	50	20% of Vac	25 r.p.m.	Use 11T Unit Drive
99-354mm (3.9-14.0ins)	6902643	Ø0.8x24x 1 L	50	20% of Vac	25 r.p.m.	Shaft Sprocket
Multi-line 67-120mm (2.6-4.7ins)	6902930	Ø0.8x72x 2 L	40	20% of Vac	12 r.p.m.	Use 11T Unit Drive
108-177mm (4.2-7.0ins)	6902646	Ø0.8x48x 2 L	30	20% of Vac	12 r.p.m.	Shaft Sprocket
200-354mm (7.9-14.0ins)	6902812	Ø0.8x24x 2 L	30	20% of Vac	12 r.p.m.	



- Notes:
- 1/. Use standard singulator for turnip.
 - 2/. Use agitator with only 1 finger fitted where shown for turnip.
 - 3/. Remove plastic seed dividers for single line work.
 - 4/. The seed disc speeds recommended will produce acceptable spacing. Increasing disc speed will cause seed spacing to deteriorate. Reducing disc speed will result in spacing improvement together with lower vacuum requirements.
 - 5/. Excessive vacuum requirements normally indicate a problem :-
 - a) Worn or damaged seed discs or air gallery blocks.
 - b) Incorrect hole size in seed discs.
 - c) Excessive disc speed.
 - d) Singulators set too aggressively.



STANHAY WEBB WARRANTY POLICY

LIMITATION OF LIABILITY

1. Stanhay Webb Ltd (the company) does not give any Warranty in respect of its products except the limited Warranty contained in paragraphs 3-5 below which is expressly in lieu of all other warranties or conditions expressed or implied and of all other obligations or liabilities on its part. The company supplies its products on the express condition that the purchaser is solely responsible for determining the suitability of the product for his requirements and conditions of use. Stanhay Webb will in no event be liable for any incidental or consequential damages of any nature or source allegedly incurred through defects, incorrect operation or loss of use of the product, whatsoever, nor for any sum in excess of the price received by the Company for the goods for which liability is claimed. The Company is not responsible for the performance of its products: it is the purchaser's sole responsibility to ensure that any Stanhay Webb product is performing to his satisfaction at all times, and this responsibility overrides absolutely any suggestions or assistance offered in good faith by the Company or its agents.
2. Stanhay Webb operates a policy of continuous improvement, and reserves the right to change specifications at any time without prior notice, and without incurring any obligations to make such changes to products previously purchased.

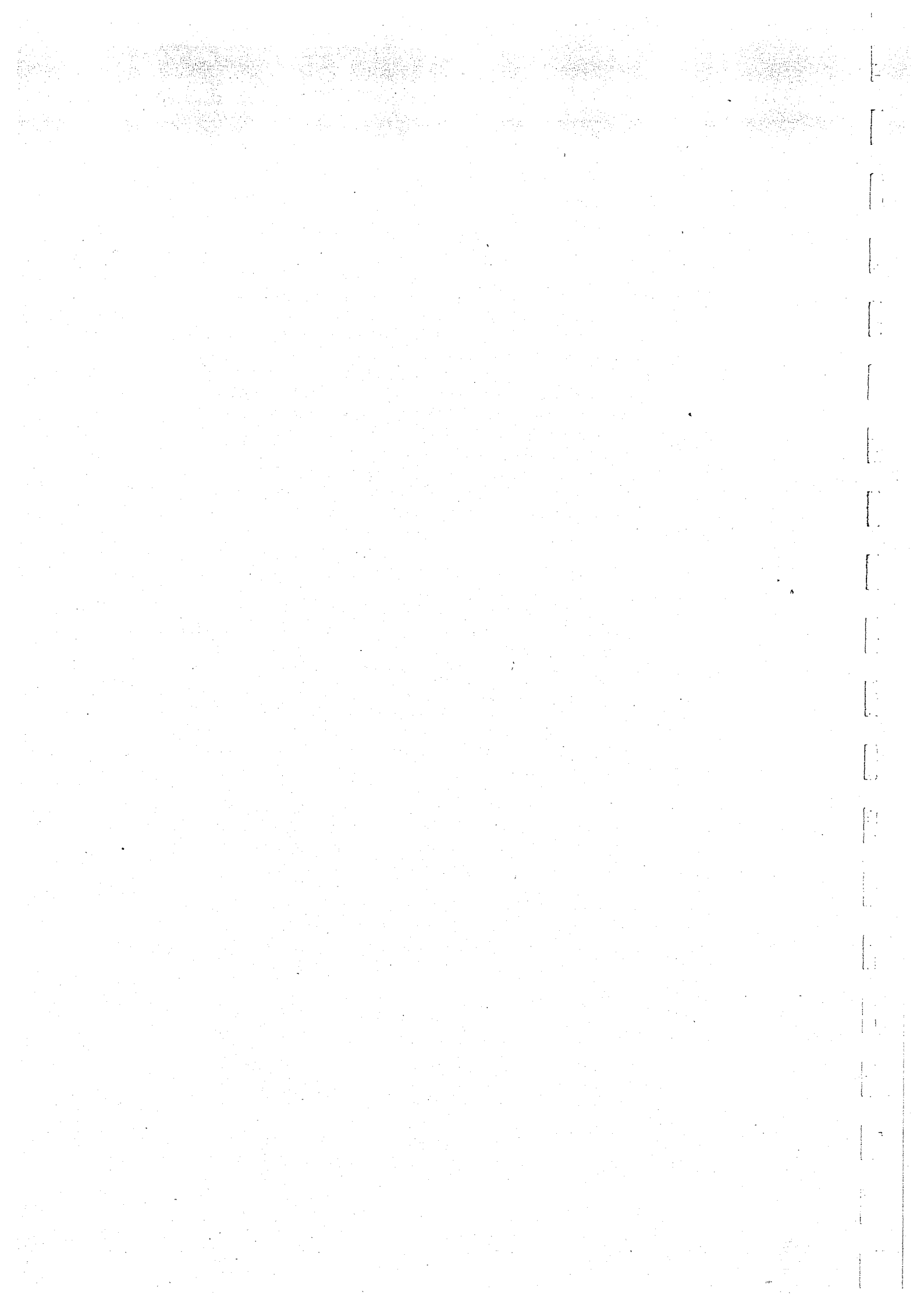
LIMITED WARRANTY

3. Stanhay Webb Ltd warrants to its authorised Distributor or Dealer all new products supplied of its manufacture, when correctly assembled, operated and serviced, to be free from defects in material and workmanship, for a period of nine (9) months (the warranty period) after the date of delivery by the Distributor or dealer to the original retail purchaser. Its obligations under this warranty are limited to making good on products for which payment to the Company is not overdue any part or parts (excluding normal wear) of its own manufacture which shall have been reported in writing to the Company within thirty (30) days from date of failure thereof, and which the Company's examination shall disclose to its satisfaction to have been defective. Stanhay Webb repair parts are warranted similarly to ninety (90) days from date of replacement or for the unexpired warranty period of the applicable Stanhay Webb machine, whichever is the longer.
4. Due to the particular nature of Stanhay Webb products, this Warranty is void absolutely if any part not supplied by the Company is sued in assembly or repair, or if the product has been altered, assembled, repaired or used in anyway, configuration or conditions differing from the written recommendations and instructions of the Company (whose decision is final).
5. In the event of components supplied by Stanhay Webb not of its own manufacture for which payment to the Company is not overdue being reported in writing as defective during the warranty period, Stanhay Webb will endeavour to claim against the manufacturer of such components and in the event of any claim being successful will pass the benefit on to the customer.

CONDITIONS OF SUPPLY

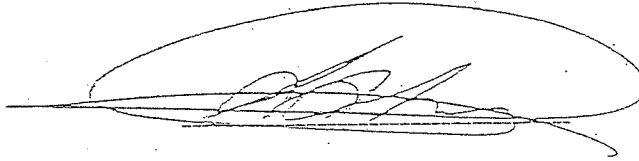
6. No warranties other than those expressly noted herein are given, and not one is authorized to alter, modify or enlarge this Warranty beyond the warranties expressed.
7. This product is supplied subject to the Terms of Trading of Stanhay Webb Ltd as reproduced on the inside covers of the Company's price list.

NOTE: WARRANTY REGISTRATION FORM MUST BE RETURNED TO STANHAY WEBB LIMITED. WARRANTY VOID IF MACHINE IS NOT REGISTERED.



EC DECLARATION OF CONFORMITY

Type of Machine: Precision Seed Planting Machine
Name of model: Star
Serial Number: Number of rows:
Manufacturer: Stanhay Webb Limited
Houghton Road,
Grantham,
Lincs, NG31 6JE,
England.
Tel: +44(0) 1476 515406
Fax: +44(0) 1476 515407
Email: sales@stanhay.com



Technical Director

We, the manufacturers, hereby declare that this machine, when assembled to our design, conforms to the Essential Health and Safety Requirements of the European Union.

Wij, de fabrikanten, verklaren hierbij dat deze uitrusting, indien opgebouwd volgens ons ontwerp, voldoet aan de gezondheids- en veiligheidsvoorschriften van de Europese Unie.

Assemblé conformément à nos orders, nous, les fabricants, déclarons que cette machine répond aux norms d'Hygiène et Sécurité au Travail de la CE.

Noi, i fabbricanti, dichiariamo che questo maccinatore, quando montato secondo il nostro disegno, si conforma ai requisiti essenziali di salute e di sicurezza della Comunità Europea.

Wenn diese Maschine entsprechend unserer Konstruktion zusammengesetzt wird, erklären wir, daß sie den Arbeitsschutzvorschriften der Europäischen Gemeinschaft entspricht.

Nosotros los fabricantes declaramos que este equipo, realizando el montaje según nuestro diseño, se ajusta a las reglas esenciales de salud y seguridad de la Unión Europea.

Vi, fabrikanten, erklærer hermed at denne maskine, når den er monteret ifølge vores konstruktion, er i overensstemmelse med de essentielle sundhed og sikkerhedskrav indenfor EU.

Me valmistajana ilmoitamme täten, että ohjeittemme mukaisesti asennettuna tämä kone täyttää Euroopan Unionin olennaiset terveys- ja turvallisuusvaatimukset.

Nós os fabricantes declaramos que este equipamento, quando montado conforme nosso desenho, ajusta-se às regras essenciais de saúde e segurança da Comunidade Europeia.

Tillverkaren försäkrar härmed att denna maskin, efter sammansättning enligt vår konstruktion, uppfyller hälsooch säkerhetskrav inom EU.

