

USER MANUAL SMART SEEDER 20-24-36 SEED DRILL



DO NOT OPERATE THE MACHINES BEFORE READING THIS MANUEL!



CAUTION

This sign warms that the operations described could cause damage to machine, if they are not carried out correctly.



WARNING

This sign warms that the operations described could cause serious lesions or long term health risks, if they are not carried out correctly.



Hazard of entanglement with cardan shaft! Stay away from moving parts



READ MANUAL FIRST

Before repairing, stop the tractor and then remove the key. Crush hazard during the opening! Stay out of machine and at a safe place.



FALLING HAZARD!

Do not step up on machine. Compression hazard! Stay out of moving parts!





SEQUEEZING HAZARD!

Keep your hand away from the moving parts.









safe place.





ROTATING PARTS!

Points, indicated with the next sign, indicate parts that rotate with high speed. Do not try to touch them while the machine is operative.



CRAINE CONNECTION POINTS!

Points, indicated with the next sign are suitable in order to make the connection for lifting the machine.



Rotation Speed is limited with 540 RPM

2.1. SAFETY MEASURES TO OBEY

- 1. Before starting to use, check the machine and tractor for 12. usage and traffic safety.
- 2. Get information on current general rules related to health, safety and accident prevention apart from the points 13. mentioned in this manual.
- 3. Obey the general traffic rules at the roads opened to 14. traffic. Agricultural machine, which you carry behind your tractor, is allowed for maximum 3.00 meters. If the 15. product you bought is larger than this, remove the side wheels at the roads opened to public traffic. If this is not enough, provide special equipments to transport the 16. product.
- 4. Before starting to use, learn about parts, moving parts 17. and function style of the machine by means of our authorized service, which will give you the first running service.
- Do not work with large costumes and accessories which 18. will pose entanglement risk with moving parts such as shaft.
- 6. Clean the machine in order to prevent possible fire risk.
- Control around of the machine before operating. Send 19. children, animal, etc. away, if any. 20.
- Be careful if anyone is on the machine during operating and transportation. Connect the machine to tractor by 21. means of using proper tools. Connection categories of tractor and equipment must be same for 3 Point 22. suspensions; if they are different, it must be connected by inserting an adapter part between them. 23.
- 9. Do not forget that there is compression risk during connecting the machine to the tractor through 3 point 24. suspensions. Before connecting or removing equipments to or from tractor through 3-point suspension system, switch hydraulic control lever to appropriate position. 25. Hydraulic handles can stand and descend accidently. While making lever adjustments for 3 points suspension 26. system, do not come between tractor and machine. While machine moving in as state of suspension on the road that is opened to traffic, you must lock the system which controls hydraulic suspension handles.
- 10. Check warning and light devices of the machine in terms of traffic rules.
- 11. Ensure that light, warning devices and protections are in place and operation.

- 12. If hand brake of tractor hasn't been pulled and wedge hasn't been put, do not allow anyone to come between tractor and machine.
- Do not exceed axle loads, weight and transport measures which are allowed.
- During transportation, do not leave the tractor in operation.
- 15. Do not allow unqualified people, children and those whose states of health are not suitable to use tractor while machine is attached to tractor.
- Connect appropriate loads in front of tractor while attaching machine to the tractor.
- 17. While machine and loads are connected to tractor, steering wheel and brake capacity of the tractor will be affected negatively. Drive tractor more carefully and slowly because driving safety will decrease.
- Be careful with turns; width and centrifugal power of the machine can make tractor get out of control. There should be nobody within the turn and skidding area of the machine.
- 19. Be careful if there is anybody within work space.
- 20. There should be nobody around the shafts which are opening and closing hydraulically during operation.
- 21. Do not put your hand into fertilizer storage while machine is in operation.
- 22. Do not definitely put your hand or anything else into outlet of machines running with pneumatic systems.
- 23. During transportation, lift marker handles and fasten them by pin.
- Before connecting machine according to threepoint suspension system, close the hydraulic valve of tractor's rear handles.
- 25. While transporting the machine, ensure that safety pins of three-point connection.
- 26. During transportation, lock hydraulic mechanism of tractor when machine is suspended. While interconnecting hydraulic cylinder and engines, be careful if there is leakage on hydraulic hoses. While connecting hydraulic hoses to hydraulic system of tractor, ensure that system is not under pressure for either sides. If the connections are linked reversely, remember that functions will be reverse as well. (Risk of accident!) Check hydraulic hoses frequently; replace them with a new one

if there is corrosion or tearing. Use hoses recommended by manufacturer definitely. As there is risk of injury, use protective equipment (mask, eyeglasses, protective dress, etc.) when you check leakages of hydraulic system. There will be serious injuries if high-pressure liquids (hydraulic oil) penetrate on skin! In case of such a situation, get medical assistance immediately. If you take an action on the hydraulic unit, land the machine. Empty the oil into the unit, decrease the pressure and stop the tractor.

- 27. Before leaving the tractor, take down the machine. Stop the engine. Remove the switch key.
- 28. Specific information and mounting equipment are required to mount wheels. Therefore, it is appropriate that experts should carry out wheel repairing processes. Air pressures of wheels should be controlled periodically and pumped up, if required.
- 29. Below circumstances will make the machine OUT of WARRANTY As distinct from the original design.
- Not using original spare parts.
- Any modification and repair performed by unauthorized people.

4. MAINTENANCE

3.1. GENERAL DEFINITION AND INTRODUCTION OF SUB-TYPES

"Universal Seed Drill" is an agricultural machine that runs with mechanic principles and is designed to plant various grains. Main function of universal seed drill is to distribute seeds that are in the list of CULTIVABLE SEEDS according to table of technical values and to overlap. It doesn't guarantee ensuring a certain yield of harvest independently of other processes before and after the planting process. Universal seed drill is not a STUBBLE DRILL machine. Field to be planted should be prepared for planting appropriately so that machine can carry out the duty healthfully, and planting should be performed when soil is at the suitable temper. It has sub-types according to three different features.

Technical values table related to these sub-types is in manual. Machine should be used according to technical values related to its type.

1. Fertilizer System:

Those which have fertilizer system are called WITH FERTILIZER and those which have not fertilizer system are called WITHOUT FERTILIZER type. Seed drills with fertilizer have hoppers consisting of two reservoirs. The front side is for SEED, back for FERTILIZER. On the fertilizer reservoir, there is a strainer for big spheroid fertilizers. If the parts, called "curtain sheet", disconnecting two reservoirs are disjointed and removed, whole hopper can be filled up with seed.

III n case of such processes, ensure that fertilizer craw sliding covers are COMPLETELY CLOSED. After this process, if you have to use the machine with fertilizer again, insert the precise curtain sheets, which

2. Drill Unit Structure:

There are Spring Loaded Coulter, Single Disk and Double Disk types of machines. Structure of our machines gives opportunity to change between double disk single disk machines. However, it is not possible to connect a different leg type to a "Spring Loaded Coulter" type machine.

3. Number of Legs:

Number of legs varies by size of the machine. Interval between the legs is 12,5 cm for End Spring models, but it is 13 cm for one-disk and double disk models.



125 mm.

130 mm.

3.2. HOW TO ATTACH MACHINE TO TRACTOR

Universal seed drill is attached to tractor by means of 3 points suspension method. While performing this process, make the machine parallel with floor. This is IMPORTANT for correct planting. Make the FINE adjustment at peak connection point when you lift up the machine by means of hydraulic levers of your tractor.

Put grease oil into all grease nipples of machine before starting. It is recommended that (after approximately 8hour running) connectors of the new machine, for example loaf etc., should be checked, and tighten the parts that are loosened under loads because of spaces.



1. Adjusting Amount of Seed and Fertilizer Planting

As intensity and surface smoothness of seeds can vary from region to region, from type to type and over the time, we don't approve to say that values on the adjustor sheet of transmission means certain kilograms of seed will be planted per hectare. In addition to this, the best method is to make adjustments again every season and for each different seed because a wide range of sort of seed can be planted by means of this product and there are other adjustment mechanisms such like valve, shutter cover which have influence on amount of planting. The same situation is valid for fertilizer adjustment. Experiences can ease this process but we emphasize that you shouldn't take only experiences into consideration for the precise adjustment for amount of planting.



Before the adjustment you must perform controls written in the chapter "Periodic Maintenance".

The following processes should be carried out in order to examine how much seed can be planted per hectare in which position of transmission: - Fill in seed hopper with seeds to be planted.

- Determine position of gear according to sort of seed and make adjustment accordingly.
- Open shutter covers as much as needed.
- By means of valve control lever, bring and stabilize the space between valve and gear to the needed level.
- Stabilize control lever of transmission at any point (or the most appropriate point by your experiences) on adjustor sheet.
- By means of turning the wheels 3-5 times, ensure that craws and gear spaces are fulfilled by seed.
- Insert the test container under the funnels by pulling down the mechanism holding Seed-Fertilizer Tubes.
- Turn the seed movement wheel 20 times (cycles).
- Collect the seeds poured into test container and weigh by the help of precision balance.
- Multiply the weight you found by the coefficient corresponding to your machine into the following table.
- The obtained result presents amount of seed that will be poured per hectare with 5% of fudge factor.
- If this result you found is less than the amount you desired, slide the control lever of transmission so as to rise up to a higher value on the adjustor sheet and repeat the operation until you reach the value you want.
- If this result you found is more than the amount you desired, slide the control lever of transmission so as to rise up to a lower value on the adjustor sheet and repeat the operation until you reach the value you want.

As for Fertilizer Planting Adjustment, FERTILIZER TRANSMISSION WHEEL will be turned (when you look the machine from behind, it will be on the LEFT side) and adjustment will be made for adjustor transmission of fertilizer planting, differently from the process above.

3.3.9. CRANK SHAFT

It is the part that is a sub-section of Three Point suspension system and allows hydraulic lifting levers of tractor to grip seed drill. As the load of machine is added on this shaft, it is too important to use true shaft according to the size of machine, and to replace with the new one when is it required. For the machines with 3 meters work extend in maximum, crank shaft is used in type of Category II. As for the oversize machines, crank shaft is used in type of Category III.

3.3.10. DEPTH ADJUSTOR MECHANISM FOR SINGLE DISC AND DOUBLE DISCS MACHINES

There is a hydraulic cylinder behind the part called arbor that interconnecting main chassis and chest part of the machine. This cylinder allows seed drill units go up and down by means of turning seed drill machine connection profiles of front and back line. Therefore, adjustment can be made for planting depth. You have to connect two hoses that command to this piston to your tractor in addition to the hydraulic hoses going to marker levers.

Before commanding to the piston, loosen and remove the depth adjustment fixing bolt that you see in the figure. After making the intended depth adjustment, stabilize the fixing bolt again in order to keep this adjustment during planting.

It is recommended you to carry out required maintenance processes before and after each planting season so that you can use the drill for many years.

Safety Measures to be Taken and Obeyed during Maintenance

1. Before starting maintenance, repair and cleaning, you must definitely remove the connection between seed drill and tractor.

- 2. If the maintenance will be performed while machine is lifted, insert safety supports which can hold the weight under the machine.
- 3. While parts with cutting surfaces and sides are changing, you must definitely use appropriate gloves and equipment.
- 4. If repair will be made by electric or gas metal arc welding on the machine, clean the oiled parts or do not make welding operation on the parts which cannot be cleaned.
- 5. Supply the manufacturer-specific parts as original. As for commercial spare parts (bolt, loaves, chain, etc.), choose the marks and products which have quality certificates.

Activities should be performed AT THE END OF Planting Season

- Empty the seed and fertilizer reservoirs of your machine and clean with water (pressured water is recommended, if any) and then drain.
- Clean the oils rubbed off on the parts, which are not run by oil, by the help of a clean cloth or oakum.
- Pressure oil into the grease nipples which should be greased.
- · Grease the chains with chain oil.
- Clean the mud wherever is rubbed off.
- If possible, keep your machine in a closed area. If it is not possible, keep safe your machine from bad air conditions by the help of a canvas roof.

Activities should be performed BEFORE Planting Season

SS 20 Smart Seeder

User Manual

1. General

SS 20 Seeder are especially designed for farmers of private farms and large state-owned farms. They are suitable for use in large and medium tracts. The drill is attached to a tractor higher than 36kw in power, and can sow seeds and apply fertilizer in the same travel. The drill is mainly used for sowing wheat and grain. With row spacing adjusted, it can also sow sorghum and soybean. For SS-24 Seeder, users may order from us the marker combination, and covering roller combination.

This drill adopts the double-disc, double-row-bearing furrow openers, which are notable for low penetration resistance while high strength. The seed-release unit and fertilizer-release unit adopt externally fluted rollers made of iron. The seed box with large capacity are suitable for use in large tracts. The power transmission is through chain and sprocket, featuring high reliability, easy adjustment, and quick maintenance.

In this user manual, important safety information is indicated by an alerting symbol. Care shall be exercised where the symbol appears. Read carefully the information following the symbol, and notify other operators of such information.



Danger: Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

Warning: Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

Caution: Indicates a potentially hazardous situation which, if not avoided, could result in minor or medium injury.

Important: Indicates a situation which, if not avoided, could result in damage to the drill or environment.

This user manual is an integral part of the drill, and provided to user along with the drill. Please keep this user manual properly. In case of any difficulty in understanding the contents, please contact your nearest dealers.

2. Intended Use

SS series Seeder are only used for normal agricultural operations including the drilling of wheat, soybean and small grass seeds. These drills may not be used for other purposes. Users shall comply with the manufacturer's requirements concerning operation, maintenance, repair and intended use of the drills.

This drill can only be operated, maintained and repaired by persons who are familiar with its characteristics and have relevant safe operation knowledge. Rules against contingency including road traffic rules and other safety regulations shall be in accordance with in any time. The manufacturer shall not be responsible for any injury to

persons, or damage to the drill, or deterioration of drill performance due to modification to the drill without our permission.

3. Technical Safety Rules

3.1 Cautions

- A Please read this user manual carefully before you operate the drill, to familiarize yourself with the (1)construction, installation, performance, operation, adjustment, repair, maintenance, and troubleshooting of the drill.
 - **(**2) To avoid intertwining do not open or remove the safety shield while the drill is in operation.

(3) Do not reverse the tractor while sowing. Trial sowing shall be conducted before normal sowing. The purpose of trial sowing is to obtain required seed rate and sowing depth.

(4)Â

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It is strictly prohibited to turn the tractor with the drill not lifted.

(5)Seed addition, seed removal, and troubleshooting must not be carried out until the drill has been shut down.

- (6) No one may stand on the pedal while the drill is in operation.
- (7) Sufficient lubricating oil shall be filled before operation of the drill.

3.2 Warning Signs

(1) The warning sign is attached to each safety shield. (2) The warning sign is attached to the side of seed/fertilizer box.





То avoid 1. squeezing or impact stay away from the drill while it is being lifted or lowered

(3) The warning sign is attached to the frontage and back of the seed/fertilizer box.



(4) The warning sign is attached to the frontage and back of the seed/fertilizer box



4. Main Technical Data:

Model	SS-20
Overall dimensions(mm)	2140×3226×1890
Mass of drill (kg)	840
Working width(cm)	300
Sowing depth (mm)	40-80
Power source (kW)	40-60
Power transmission	Chain transmission

Seed box capacity(L)	440
Ground clearance for transport (mm)	≥300
Fertilizer-release unit	Externally fluted iron roller
Seed-release unit	Externally fluted iron roller
Field efficiency (hm ² /h)	2-2
Working speed (km/h)	4-6
Basic row spacing (mm)	150 1.
Furrow opener	Double disc type, steel opener

5. Construction

This Seeder consists of: (1) drive wheel assembly; (2) sprocket hood weldment; (3) frame weldment; (4) seed box assembly; (5) rear rail assembly; (6) handwheel combination; (7) lift arm assembly; (8) lift bar assembly; (9) pedal assembly; (10) draw bar riveted weldment of furrow opener; (11) furrow opener assembly; (12) seed delivery tube; and (13) covering roller combination (see Figure 1).



Figure 1

5.1 Frame weldment combination

The frame weldment combination consists mainly of (1) frame weldment; (2) lead screw adjusting nut; (3) lead screw adjusting base; and (4) lower suspension pin. But the lower suspension pin is not provided for SS-24 drill.

The frame weldment consists of the upper suspension bracket, lower suspension arm, and rectangle frame. Square steel pipes are used for the front and rear transverse beams. U-steel is used for the longitudinal beams. The furrow opener beam made of square steel pipe is welded to the lower portion of front beam. The vertical frame has enormous strength suitable for high speed operation.





5.2 The seed box assembly consists of (1) left and right wall weldments; (2) handle; (3) 2BF24-2-4-1-1 fertilizer-release box combination; BGF24A2-4-22 seed-release unit assembly made of iron; (4) 2BF24-2-603 seed rate adjusting nut; (5) 2BF24-2-202 seed rate adjusting base; (6) indicator disc; (7) 2BF24-2-102 bearing block; (8) SS24-3-601 sprocket shaft; (9) 2BFY24-2-1-1 seed-release sprocket weldment; (10) 2BFY24-2-5 tensioner wheel combination; (11) 2BF24-2-604 seed rate adjusting sleeve; (12) seed-release shaft and fertilizer-release shaft; and (13) 6207 bearing.

See Figure 3.



5.3 The rear draw bar combination of furrow opener consists of (1) 2BFY24-5-601 V-shape bolt 1; (2) rear draw bar base weldment; (3) retainer washer; (4) draw bar weldment; (5) left guide rod support plate; and (6) right guide rod support plate. See Figure 4.



Figure 4.

5.4 The furrow opener assembly consists of (1) 2BF24-7-1A furrow opener disc assembly; (2) 2BF24-7-403A furrow opener protective cover; (3) 2BFY24-7-001 gasket; (4) furrow opener body weldment; (5) riveted seed conveying plate; and (6) protective plate weldment for furrow opener. See Figure 5.



5.5 The left and right lift arm assemblies consist of (1) SS24-05-101 shaft seat; (2) SS24-05-102 intermediate shaft sleeve chuck; (3) 2BF24-18-402 lift arm snap plate; (4) 2BF24-18-502, 3 left and right lift arm; (5) BGF-605 lift arm fixing bolt; (6) SS24-05-602 adjusting base for lift square shaft; (7) SS24-05-301 adjusting arm; (8) BG-101 lift arm joint; and (9) SS24-05-103A intermediate sleeve chuck of intermediate shaft. See Figure 6.



5.6 The drive wheel assembly consists of (1) tyre; (2) chain 10A-1×86; (3) drive wheel support arm; (4) drive wheel base weldment; (5) SS16 (24)-02-601 U-shape bolt; (6) SS24-02-406 intermediate bearing block; (7) SS24-02-604 17-tooth intermediate sprocket: (8) 6205 bearing; (9) SS24-02-605 15-tooth intermediate sprocket; (10)

2BFY24-2-5-1 intermediate tensioner wheel combination; (11) SS24-02-3 sprocket weldment for drive wheel; (12) 6208 bearing; (13) SS24-02-603 drive wheel shaft; (14) SS24-02-602 intermediate drive shaft; (15) SS24-02-101 drive wheel hub; and (16) SS24-02-102 drive wheel end cover. See Figure 7.



5.7 The lift bar combination consists of (1) SS24-07-501 lift bar; (2) BG-646 lift bar spring; (3) BG-461 cross washer; and (4) BG-647 M-shape pin. See Figure 8.



Figure 8

5.8 The marker combination consists of (1) front posts assembly; (2) rear posts assembly A; (3) handrail tube; (4) handrail tube assembly; (5) stepladder; (6) elbow; and (7) middle tube. See Figure 9.



5.9 1、 covering roller supporter 2、 bearings1307 3、 covering roller shaft weldment 4 、 covering roller weldment5、 middle tube Figure 10.



5.10 The handwheel combination consists of (1) BG-114 handwheel and (2) SS24-04-601 adjusting lead screw. See Figure 11.



5.11 The chain housing weldment consists of (1) chain housing and (2) stud bolt. See Figure 12.





5.12 The tensioner wheel combination consists of (1) 2BFY24-2-604 tensioner wheel shaft sleeve; (2) 2BFY24-2-5-1 tensioner wheel combination; (3) 2BFY24-2-802 locating pipe; and (4) GB12-88 bolt M10×55. See Figure 13.



6. Installation

Before installing the (fertilizer) Seeder check the categories and quantities of parts against the packing list. Place the parts as per category at clean positions. Remove dirt if any from bearings or friction locations, and then apply lubricating oil to them. Referring to the section of "Construction", conduct the installation as follows:

- 1. Securely erect the frame weldment combination, with the upper suspension bracket facing upwards.
- 2. By means of the hoop (2), attach the funnel (1) and seed/fertilizer delivery tube (3) to the furrow opener (4). See Figure 14.



Figure 14 图十四

(Note: In case a single seed box is provided, the seed delivery tube is only installed on the right.)

3. Attach the above combination to the rear draw bar combination of furrow opener, by using the standard part on the latter combination. See Figure 15.



4. By using the V-shape bolts on the left, attach in a staggered manner the combinations formed in step 3 to the two furrow opener hollow beams on the frame weldment. See Figure 16.





Figure 16

5. By means of the M12×45 bolt, attach the left and right lift arm assemblies together with the pedal bracket weldment to the frame weldment. Attach the handwheel combination to the lead screw adjusting nut on the frame, then to the lift square shaft adjusting base of square shaft assembly.

See Figure 17: (1) handwheel combination; (2) frame; (3) M12×45 bolt; (4) lift square shaft assembly; (5) pedal bracket weldment; (6) lead screw adjusting nut; (7) lift square shaft adjusting base (Note: The intermediate sleeve chuck of intermediate shaft is installed in the middle of frame.)



6. Installation of lift bar assembly

Remove the M-shape pin in lift bar assembly, the lift bar spring and the cross washer. Install the lift bar to the lift bar joint of lift arm assembly. Install the lift bar spring, cross washer, and M-shape pin. Attach the lift bar to the rear draw bar combination of furrow opener, by using the pin roll on the combination. Note: All M-shape pins of lift bar assemblies shall be aligned with each other. See Figure 18.



- 7. Installation of seed box
- (1) Open the box and remove any dirt in the box. Check that no dirt blocking the outlets of seed-release unit and fertilizer-release unit.
- (2) Place the box on the ground (with the handle facing back). Install the support to the middle of seed box bottom. Install legs to the front and rear walls of box.
- (3) Place the box on the upper portion of frame weldment. By means of bolts and other fasteners, attach the left and right walls of box, legs of box, and support of box bottom to the frame weldment (See Figure 1).
- 8. Installation of drive wheel assembly. By means of U-shape bolts, fix the drive wheel assemblies to both sides of frame so that the SS24-02-605 15-tooth intermediate sprocket on the intermediate drive shaft is aligned with the sprocket outside the seed/fertilizer box assembly. Install the 10A 86-element chain, and the sprocket weldment for drive wheel to the SS24-02-604 17-tooth intermediate sprocket. (Note: the position of SS24-02-605 15-tooth intermediate sprocket are interchangeable to obtain different speed ratios.) . Install chains to the boxes (one seed box and one fertilizer box) as follows: (1) 10A 62-

element chain for 36-tooth sprocket driving 36-tooth sprocket; (2) 10A 52-element chain for 15-tooth sprocket driving 36-tooth sprocket; and (3) 10A 42-element chain for 15-tooth sprocket driving 36-tooth sprocket. Install chains from the intermediate drive shaft to the seed/fertilizer box as follows: (1) 10A chain for 15-tooth sprocket driving 36-tooth sprocket. The chain consists of 80 elements in case of double boxes and 16 or 18 rows), or 82 elements in case of 24 rows; (2) 10A chain for 15-tooth sprocket driving 15-tooth sprocket. The chain consists of 70 elements in case of double boxes and 16 or 18 rows, or 72 elements in case of 24 rows; (3) 10A 90-element chain for 15-tooth sprocket driving 36-tooth sprocket driving 36-tooth sprocket in case of single box and 18 rows; (4) 10A 100-element chain for 15-tooth sprocket driving 36-tooth sprocket in case of single box and 18 rows; (5) 10A 92-element chain for 15-tooth sprocket driving 36-tooth sprocket in case of single box and 24 rows; and (6) 10A 102-element chain for 15-tooth sprocket driving 36-tooth sprocket in case of single box and 24 rows. Tighten the chains using tensioner wheels. See Figure 19.

- 8. By means of the 4×70 cotter pin, install the funnel mentioned in step 2 to the seed/fertilizer-release box assembly in the seed/fertilizer box assembly.
- 9. Install the left and right chain housings.
- 10. Install the marker bent arm to the front end of left/ right side beam of frame. Install the marker bracket weldment to the rear end of left/right side beam of frame.
- Attach the complete drill to the tractor. Install the upper and lower suspensions of frame to the upper and lower draw bars of tractor respectively. Adjust the tractor suspension mechanism to level the drill, avoiding nonuniform sowing depth.

7. Principle

The drive wheel rolls on the ground, driving the drive wheel shaft and the sprocket whereon. By means of a chain, the sprocket on this shaft drives the sprocket on the intermediate drive shaft, which also by means of a chain drives the sprocket of seed/fertilizer box. By means of a cotter pin, the sprocket of seed/fertilizer box is attached to the sprocket shaft so as to drive the seed-release shaft. By means of a pin, the seed-release shaft is attached to the seed-release roller, driving the seed-release roller. The seed-release roller is an externally fluted roller, releasing the seed sthat flow from the seed box into the seed-release box. The released seeds are directed, via the funnel and seed delivery tube, into furrow opener, and then drop into the furrow. By means of a chain, the fertilizer-release shaft is attached to the seed-release unit. The fertilizer release follows the same principle as seed release. For transmission schematics, see Figure 19 (double boxes) and Figure 20 (single box).

1. Drive wheel 2. 20-tooth sprocket weldment for drive wheel 3. 15-tooth intermediate sprocket 4. 17-tooth intermediate sprocket 5. Seed-release sprocket weldment

(The position of the 15-tooth intermediate sprocket and that of the 17-tooth intermediate sprocket are interchangeable.

The direction of seed-release sprocket weldment may be changed.)



8. Adjustment8.1 Adjustment to Row Spacing

The basic row spacing is designed to be 150mm. Proper adjustment may be made to row spacing. Before spacing adjustment, adjust the distance between furrow openers. Then adjust the corresponding lift bar assembly, aligning it with furrow opener to block the idle seed-release unit.

8.2 Adjustment to seed/fertilizer rate

- a) Adjustment to the working length of a group of fluted rollers of seed-release units or fertilizer-release units. At the same revolution per minute, longer working length of fluted roller means larger seed/fertilizer rate. To adjust seed rate, loosen the locking nuts at both ends of seed rate adjusting base. Rotate forward or backward either locking nut, to increase or decrease respectively the working length of fluted rollers. After the adjustment, tighten the locking nuts.
- b) Adjustment to the working length of an individual fluted roller of seed/fertilizer-release unit. Check that the working length error of all seed/fertilizer-release rollers is not greater than 1mm. Adjustment shall be made in case of greater error. To adjust the working length, loosen the retainer rings at both ends of seed/fertilizer-release

unit. Axially move the seed/fertilizer-release roller and the blockage roller. After the adjustment, tighten the retainer rings.

c) Seed rate test: Erect the Seeder or tow it by a tractor, to rotate the drive wheel for several turns (so that the seed-release box is full of seeds). Rotate the drive wheel at nearly the working speed. Use a small container to receive the seeds out of all seed-release units. Weigh these seeds. Calculate the seed rate per hectare (1 hectare = 15 mu). It the calculated value disagrees with the specified value, adjust the working length of seed-release release roller. Formula for calculating seed rate per hectare:

 $Q = 10000 \square G$

 $\Box \Box D \Box n \Box B \Box (1 + \Box)$

where: Q-seed rate per hectare, kg/hm²

G-----mass of seeds out of all seed-release

boxes, kg D----drive wheel

diameter(0.68m) n----number of revolutions

of drive wheel B----- working width of

wheel, $\delta {=}5\% {-}10\%$

If the calculated seed rate deviates from the requirement, adjust the working length of seed-release roller. Then carry out the test again. Adjust the working length until no deviation exists.

Seed rate may be adjusted with reference to the following table.

Reference Table for Speed Ratio and Seed Rate

Reference Table for Speed Ratio and Seed Ratio						
No.	From sprocket of shaft to intermedia	drive ate shaft	From intermediate shaft to sprocket of seed box	Maximum seed rate		
1	20-tooth sprocket 17-tooth sprocket	driving	15-tooth sprocket driving 15-tooth sprocket	43.8		
2	20-tooth sprocket	driving	15-tooth sprocket driving	18.2		

	17-tooth sprocket		36-tooth sprocket	
3	20-tooth sprocket 15-tooth sprocket	driving	17-tooth sprocket driving 15-tooth sprocket	56.3
4	20-tooth sprocket 15-tooth sprocket	driving	17-tooth sprocket driving 36-tooth sprocket	23.4
In the table, the seed rates are given in unit of kg/mu with full working length of seed release roller.		The seed rates given in reference only. Considerin drive wheel, and difference seed rates shall be determ	the table are for g slippage rate of e in seeds, actual ined through test.	

- 8.3 Adjustment to sowing depth: To adjust sowing depth, rotate the handwheel combination to change the pressure applied on furrow opener by the lift arm. In case of hard soil, move the cross washer and M-shape pin to higher orifices when the furrow opener penetrates shallowly, in order for the spring to apply greater pressure on the furrow opener. Note: All M-shape pins of lift bar assemblies shall be aligned with each other.
- 8.4 Adjustment to chain tension: Move the tensioner wheel to tighten properly the chain.
- 8.5 Adjustment to fertilizer rate: For the adjustment, refer to the adjustment to seed rate. Since seeds and fertilizer drop in the same furrow, excessive fertilizer may "burn" the seeds. Please select fertilizer rate as per fertilizer nature and cultivation requirement.

Important: After adjustment to seed rate, tighten the adjusting nut to avoid seed rate variation.

- 9. Operation
- 9.1 Check Prior to Sowing
- (1) Check and tighten all fasteners.
- (2) Apply sufficient lubricating oil to each lubrication location.
- (3) Check that the lift, transmission, seed-release, fertilizer-release mechanisms work normally.
- (4) Check that the Seeder is correctly attached to the tractor and the Seeder frame remains level.
- 9.2 Caution
- (1) Before sowing conduct the idle running test. Do not use the drill until all mechanisms work normally.

- (2) The tractor driver may not start or stop the tractor until the operator or another person verifies the situation is safe and gives corresponding signals.
- (3) Do not reverse the tractor or turn it suddenly while sowing. Do not add seeds while transporting the drill.
- (4) Before turning the tractor, suspend the drill; otherwise damage is caused to furrow opener.
- (5) Oil addition, seed addition, nut tightening, and adjustment to seed rate are strictly prohibited while the Seeder is traveling.
- (6) No one may stand between the tractor and the Seeder or sit on the seed/fertilizer box while the Seeder is in operation.
- (7) No one may stand on the pedal while the drill is in operation, as the pedal is only used for seed addition.
- (8) Troubleshooting and repair cannot be performed until the drill has been shut down.
- (9) Install the housing before sprocket operation; otherwise injury could occur.

9.3 Safety rule

- (1) Start and stop the tractor as per requirements. Do not start the tractor until you verify the situation is safe and has received the signal.
- (2) Oil addition, seed addition, seed removal, nut tightening, and adjustment to seed rate are strictly prohibited while the Seeder is traveling.

(3)No one may stand between the tractor and the Seeder or sit on the seed/fertilizer box while the Seeder is in operation.

(4)Troubleshooting and repair cannot be performed until the drill has been shut down.

(5)Install the housing before sprocket operation; otherwise injury could occur.

10. Maintenance and Storage

10.1 Daily Maintenance

- (1) Remove mud from the drill when each shift ends.
- (2) Check all fasteners for slack when each shift ends.
- (3) Check all transmission parts for unsmooth rotation. If necessary, adjust them.
- (4) Apply grease to each lubrication point at each shift.

10.2 Storage in Fallow Period

(1) Clean the drill when the season operation ends.

- (2) Using kerosene, clean the seed-release units, fertilizer-release units, furrow openers, and all transmission parts. Apply lubricating oil or grease to all lubrication points.
- (3) If paint has come off a part, re-paint the part. Restore or replace the damaged or worn parts.
- (4) Store the Seeder in a weather-proof shed.
- (5) Insert a wood board under furrow opener and drive wheel.
- (6) Remove the seed/fertilizer delivery tube. Clean it then store it at natural status.

(7)Properly store the spare parts and tools of the

drill. 11. Troubleshooting

Trouble	Cause	Solution
Chain transmission noise	Excessive slack of chain	Adjust the tensioner wheel position.
Unsmooth rotation of furrow opener disc	 Tight assembly. Damage to bearing 	 Adjust the assembly. Replace the bearing.
No seeds in furrow	 Furrow opener blockage by mud Blockage of seed delivery tube 	 Remove the mud. Clean the tube interior
Furrow opener piling or pushing soil	 Unsmooth rotation of disc Blockage by clod Too loose clod 	 Adjust the disc. Remove the clod. While the drill is traveling, lift one time the furrow opener and then lower it.
Excessive variation of row spacing. Furrow opener swinging left and right	 Looseness at riveted location of draw bar Draw bar deformation 	 Re-rivet. Correct the draw bar or reinforce by welding.
 Difficulet penetration of furrow opener Failure to reach required sowing depth 	 Insufficient pressure of lift bar spring Left and right lift arms too high 	 Increase the pressure. Move up the M-shape pin. Rotate the handwheel to increase spring pressure.

12. List of Accessories

No.	Code	Name	Quantity	Remark
1		Hook wrench 47	1	For adjustment to seed rate

13. Annex 13.1 Warranty

- 1. This product is under warranty for a period of 12 months commencing on the date of purchase (as written in the invoice)
- 2. Within the warrant period, damage to the drill or deterioration of drill performance due to drill quality is covered by the warranty, if it is verified that it shall be responsible for the damage or deterioration.
- 3. This product is not under warranty if the warranty period expires.

The warranty is invalid any of in the following cases. The user shall pay reasonable expenses for repair. (1) Improper use, maintenance or maintenance;

- (2) Modification to the drill without our permission;
- (3) Failure to provide the invoice and warranty voucher;
- (4) Failure to keep the damaged part undisturbed;
- (5) Fault due to force majeure.

SS 24 Smarter Seeder SS 36

User Manual

SS 24 and SS 36 (fertilizer) seeders are especially designed for use in large and medium tracts. SS 24 and SS 36 (fertilizer) seeders are 24-row and 36-row drills respectively with a basic row spacing of 150 mm. Users may add or remove furrow openers as per cultivation conditions at their regions. Two types of furrow openers are provided for the SS 24 seeder; one type of them is especially designed as per cultivation conditions , which can be changed from one row into double rows. SS 24 and SS 36 (fertilizer) seeders are all towed by tractors and can sow seeds and apply fertilizer in the same travel. These drills are mainly used for sowing wheat and grain. With row spacing adjusted, they can also sow sorghum and soybean. Users may order from us the markers and compaction units if needed.

This series of (fertilizer) seeders adopt hydraulic system to lift and lower furrow openers. This design features simple construction while easy control. Square steel pipes are welded to form the frame with high rigidity and strength. Thus it is possible to increase the capacity of seed/fertilizer box. The seed-release unit and fertilizer-release unit adopt externally fluted rollers made of iron. Power transmission is through chain and sprocket, featuring high strength and exactness. Four speed ratios for fertilizer release and eight speed ratios for seed release may be achieved by adjusting the position of sprocket of seed/fertilizer box. Various seed/fertilizer rates may hence be obtained. This series of drills adopt the doubledisc, double-row-bearing furrow openers, which are notable for low penetration resistance while high strength. Steel members are welded to form the furrow opener body with much greater strength. The drive wheel adopts a pneumatic rubber tyre, increasing to some extent sowing speed. In addition, when the drill is traveling on road, the drive wheel can also reduce damage to the road and the drill itself due to vibration. The hydraulic system is equipped with a KZ1-10 quick coupling for rapid attachment to tractor (the user may replace this quick coupling if it disagrees with the coupling of tractor). The hydraulic system is also equipped with two throttle valves, which are used for one-side 12 (or 18) rows sowing.

In this user manual, important safety information is indicated by an alerting symbol. Care shall be exercised where the symbol appears. Read carefully the information following the symbol, and notify other operators of such information.

A

A

Danger: Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

Caution: Indicates a potentially hazardous situation which, if not avoided, could result in minor or medium injury.

Important: Indicates a situation which, if not avoided, could result in damage to the drill or environment.

This user manual is an integral part of the drill, and provided to user along with the drill. Please keep this user manual properly. In case of any difficulty in understanding the contents, please contact your nearest dealers.

This series of (fertilizer) seeders are only used for normal agricultural operations including the drilling of wheat, grain and soybean. These drills may not be used for other purposes. Users shall comply with the manufacturer's requirements concerning operation, maintenance, repair and intended use of the drills.

This drill can only be operated, maintained and repaired by persons who are familiar with its characteristics and have relevant safe operation knowledge. Rules against contingency including road traffic rules and other safety regulations shall be in accordance with in any time. The manufacturer shall not be responsible for any injury to persons, or damage to the drill, or deterioration of drill performance due to modification to the drill without our permission.

Cautions

(1) A Please read this user manual carefully before you operate the drill, to familiarize yourself with the

construction, installation, performance, operation, adjustment, repair, maintenance, and troubleshooting of the drill.

purpose of trail sowing is to obtain required seed rate and sowing depth.

Â (3)It is strictly prohibited to turn the tractor with furrow openers not lifted.



(4)

(5)

(7)

Seed addition, seed removal, and troubleshooting must not be carried out until the drill has been shut down.



No one may stand on the pedal while the drill is in operation.



(6)To avoid squeezing or impact stay away from furrow opener after it has been lifted.

Â

Sufficient lubricating oil shall be filled before operation of the drill.

(8)

To avoid intertwining do not open or remove the safety shield while the drill is in operation.

Warning Signs

(1) The warning sign is attached to each safety shield. (2) The warning sign is attached

to the side of seed/fertilizer box.

(3) The warning sign is attached to the frontage and back of the seed/fertilizer box.

(4) The warning sign is attached to the frontage and back of the seed/fertilizer box

Model	2BFY-24	2BFY-36
Overall dimensions for operation (cm)	376×736×166	436×978×166
Overall dimensions for transport (cm)	376×438×166	756×224×188
Mass of drill (kg)	1450+650	2250+650
Working width (cm)	360	540
Sowing depth (mm)	30~80	30~80
Power source(kW)	40.4-88.2	55-132.3
Power transmission	Chain transmission	Chain transmission
Fertilizer box capacity (L)		850
Seed box capacity (L)	570	920
	645	≥150
	≥150	
Ground clearance for transport(mm)		
Seed-release unit	Externally fluted iron roller	Externally fluted iron roller
Fertilizer-release unit	Externally fluted iron roller	Externally fluted iron roller
Field efficiency (hm^2/h)	2.16-3.6	3.24-5.4
Working speed (km/h)	6-10	6-10
Attachment to tractor	Towing	Towing
Number of rows (basic)	24	36
Spacing between front and rear furrow openers(mm)	260	260
Clutch	Jaw clutch	Jaw clutch
Lift mechanism	Hydraulic transmission	Hydraulic transmission
Furrow opener	Double-disc, double- row-bearing furrow opener	Double-disc, double-row- bearing furrow opener
Drive wheel	Pneumatic rubber tyre	Pneumatic rubber tyre
Basic row spacing (mm)	150 (adjustable)	150 (adjustable)

Main Technical Data

This (fertilizer) seeder consists of (1) towing beam weldment combination; (2) inclined beam weldment; (3) and (4) front/rear draw bar combination of furrow opener; (5) furrow opener assembly; (6) frame weldment combination; (7) seed/fertilizer box assembly; (8) left/right box support combination; (9) left/right chain housing weldment; (10) lift arm assembly; (11) drive wheel assembly; (12) left/right marker assembly (accessories); (13) ladder weldment combination; (14) compaction sub-assembly (accessory); (15) hydraulic sub-assembly and oil pipeline; and (16) lift bar combination. See the figure.



The towing beam weldment combination consists of

(1) 2BFY24-12-1 towing ring; (2) towing plate; (3) towing beam; and (4) towing beam base plate. See the figure.



5.2 The **inclined beam weldment** consists of (1) towing beam base plate; (2) inclined beam; and (3) inclined beam base plate. See the figure.



5.3 The **front/rear draw bar combination of furrow opener** consists of (1) 2BFY24-5-601 V-shape bolt 1; (2) front/rear draw bar base weldment; (3) retainer washer; (4) draw bar weldment; (5) left guide rod support plate; and (6) right guide rod support plate. See the figure.



5.4 The furrow opener assembly consists of (1) 2BF24-7-1A furrow opener disc assembly; (2) 2BF24-7-403A protective cover of furrow opener; (3) 2BFY24-7-001 gasket; (4) furrow opener body weldment; (5) riveted seed conveying plate; and (6) protective plate of furrow opener weldment. See the figure.



5.5 The frame weldment combination consists of (1) front beam of the frame; (2) rear beam of the frame; (3) longitudinal beam of the frame; (4) left/right pedal; (5) transverse bracket of marker; and (6) side beam of the frame. See the figure.



5.6 The seed/fertilizer box assembly consists of (1) left/right box wall weldment; (2) handle; (3) 2BF24-2-4-1-1 fertilizer-release box combination, BGF24A2-4-22 iron seed-release unit assembly; (4) 2BF24-2-603 seed rate adjusting nut; (5) 2BF24-2-202 seed rate adjusting base; (6) indicator disc; (7) 2BF24-2-102 bearing block; (8) 2BFX24-3-601 sprocket shaft; (9) 2BFY24-2-2-1 fertilizer-release roller weldment; (10) 2BFY24-3-6 base plate weldment combination of tensioner wheel; (11) 2BFY24-2-1-1 seed-release sprocket weldment; (12) 2BF24-2-601, 2 seed-release shaft and fertilizer-release shaft; (13) 6207 bearing; and (14) 2BF24-2-604 seed rate adjusting sleeve. See the figure.



5.7 The left/right box support combination consists of (1) left/right box support weldment; (2) 2BFY24-3-5 clutch rocker arm weldment; (3) 2BF (F) Y24-3-2 shifting fork weldment for clutch; (4) tensioner wheel combination for drive wheel; (5) 2BFY24-3-602 17-tooth, 12A input sprocket; (6) C8×28 key; (8) 2BFY24-3-605 clutch spring; (9) 2BFY24-3-3 clutch sleeve weldment; (10) 2BFY24-3-413 clutch washer; (11) 2BFY24-3-4 clutch sprocket weldment; (12) 2BFY24-3-803 clutch spacer bush; (13) 2BFY24-3-601 15-tooth intermediate sprocket; (14) 2BFY24-3-603 20-tooth driven clutch sprocket; (15) 6205-2Z bearing; (16) 2BFX18-02-

406 intermediate bearing block; (17) base plate for intermediate bearing block; (18) A8×18 key; and (19) 2BFY24-3-802 intermediate shaft spacer bush. See the figure.



5.8 The lift arm assembly consists of (1) 2BFY24-8-503, 4 left/right lift arm; (2) BG-101 lift arm joint; (3) 2BFY24-8-402 lift arm snap plate; (4) 2BFY24-8-2 swing arm weldment; (5) 2BFY24-8-804 lift square shaft; (6) 2BFY24-8-601 V-shape bolt 2; and (7) 2BFY24-8-101 sleeve chuck of square shaft. See the figure.



5.9 The **drive wheel assembly** consists of (1) 2BFY24-13-001 paper washer for drive wheel shaft; (2) 2BFY24-13-101 end cover of drive wheel shaft; (3) 2BFY24-13-403 washer of drive wheel shaft; (4) 33110 bearing;

(5) 2BFY24-13-3 drive wheel assembly 9.5-20; (6) 2BFY24-13-2 drive wheel hub weldment; (7) 33111 bearing; (8) 2BFY24-13-1 sprocket weldment for drive wheel; (9) flat washer 42; (10) acorn nut M42; (11) retainer washer 42; (12) 2BFY24-13-601 drive wheel shaft; (13) flat washer 48; (14) 2BFY24-13-802 spacer sleeve for drive wheel bearing; (15) nut M16×1.5; and (16) M16×40 (fine thread). See the figure.



5.10 The hydraulic circuit consists of (1) SG1-16 40×22×260 double-action cylinder; (2) LA-H10L throttle valve; (3) straight fitting; (4) tee; (5) oil pipe; (6) combination washer 18/22; (7) 2BFY24-20-601 oil pipe fitting; (8) NJ150-79 (M22×1.5) self-sealing quick coupling KZ1-10 and the following accessories are provided in case of no hydraulic output from tractor: (9) 34SM-L10H manual directional valve; (10) 4YX3-07-401 oil inlet; (11) O-ring 18×2.65; and (12) YF-10H4-S pressure regulating valve (these accessories are obtained through special order). See the figure.



5.11 The lift bar combination consists of (1) 2BFY24-16-501 (BG-540) lift bar; (2) 2BFY24-16-601 (BG-646) lift bar spring; (3) BG-461 cross washer; and (4) BG-647 M-shape pin. The BG-540 lift bar and BG-646 lift bar spring are provided for 36-row (fertilizer) seed rills. See the figure.



5.12 The lift mechanism attachment schematic: (1) 2BFY24-17-2 oil cylinder base weldment combination; (2) 2BFY24-17-4 hydraulic lift limiter; (3) 2BFY24-17-3 shifting fork weldment for adjustment; and (4)

2BFY24-17-1 connecting rod weldment combination for square shaft. See the figure



Before installing the (fertilizer) seeder place the parts as per category at clean positions. Remove dirt if any from bearings or friction locations, and then apply lubrication oil to them. Referring to the section of "Construction", conduct the installation as follows:

1.Install the drive wheel assembly (9.5-20) to the drive wheel hub combination by using the standard part on the latter. Tighten the bolts in a symmetrical manner. Refer to the figure in

5.9. (The offset of wheel hub shall be such that the smaller end is set on the side closer to the sprocket.)

2.Erect and secure the frame weldment combination to proper height. Install the drive wheel assembly to the shaft hole of frame weldment combination. Align the hole in drive wheel shaft to the set screw in the shaft hole of frame. Slightly tighten the screw so that the drive wheel shaft may not be displaced. Referring to the drive wheel drawing, tighten the acorn nut and lock the retainer washer. Tighten the set screw. (Attention shall be given to the tread direction of drive wheel. Seen from behind the drive wheel, the tread shall be like character "八" (eight)).

3.By means of a hoop, fix the seed/fertilizer delivery tube to the seed delivery tube of furrow opener. Install the front and rear draw bar combinations of furrow opener (by means of their bolts) to the furrow opener assembly. See the figure.



4.Install the above mentioned combination to the two hollow beams of frame weldment combination, by using the V-shape bolt 1 on the front/rear draw bar combination of furrow opener. For the spacing between front and rear furrow openers, refer to the seeder construction drawing. Spacing between left and right furrow openers is determined as per row spacing and cultivation conditions.

5.With the cavity facing inside, install the left and right box support combinations to the side beams of drill frame. The standard parts to be used are 12 pieces of M12×30 bolts and suited nuts and spring washers, which are in the bag of parts.

6.Install the 4 lift arm assemblies to the frame. The front left, front right, rear left and rear right lift arm assemblies are distinguished by referring to the swing arm weldment, the corresponding oil cylinder base holes and parts. The standard parts to be used are 9 pieces

of M12×30 bolts and suited nuts and spring washers, which are in the bag of parts, and the 3 pieces of M12×25 bolts and suited spring washers, which are in the rear beam of the frame.

- 7. Install the oil cylinder base weldment combination to the frame weldment combination, by using the 8 pieces of M10×25 bolts and suited spring washers in the front beam of the frame weldment combination. By using the pin rolls in the connecting rod weldment combination for square shaft, attach it to the front and rear lift arm assemblies. Draw the oil cylinder rod by 90 mm to attach the shifting fork weldment for adjustment. By using the pin roll in the connecting rod weldment to the connecting rod weldment. By using the pin roll in the shifting fork weldment to the connecting rod weldment. By using the roll pin in oil cylinder base weldment combination, attach the other end of oil cylinder to the base weldment. (See the lift mechanism attachment schematic in 5.12.)
- 8. Remove the M-shape pin in lift bar assembly, the lift bar spring and the cross washer. Install the lift bar to the lift bar joint of lift arm assembly. Install the lift bar spring, cross washer, and M-shape pin. (Note: All M-shape pins of lift bar assemblies shall be aligned with each other.) Attach the lift bar to the rear draw bar combination of furrow opener, by using the pin roll on the combination.
- **9.** By means of the 6 pieces of M10×30 bolts and suited nuts and spring washers which are in the bag of parts, fix the seed/fertilizer box assembly to the left and right box support combinations.
- 10. By means of the 2 pieces of M12×30 bolts and suited nuts and spring washers, which are in the bag of parts, and the 2 pieces of M10×30 bolts and suited nuts and spring washers, which are in the seed/fertilizer box assembly, attach the middle box support weldment to the frame and seed/fertilizer box respectively. See the figure.



- 11. Attach the 4 legs of box to the frame, by means of the 4 pieces of M12×30 bolts and suited nuts and spring washers, which are in the bag of parts. Attach the legs of box to the seed/fertilizer box, by means of the 12 pieces of M10×30 bolts and suited nuts and spring washers, which are in the seed/fertilizer box.
- 12. Install the ladder weldment combination and the guard rail combination to the frame weldment combination and the handle of seed/fertilizer box.
- 13. Installation of the funnel and seed/fertilizer delivery tube. By means of the 4×70 cotter pin which is in the bag of parts, install the funnel to the seed/fertilizer-release box. By means of the hoop which is in the bag of parts, fix the seed/fertilizer delivery tube to the outlet of funnel.
- 14. By means of U-shape bolt, install the towing beam weldment combination to the middle of front beam of the frame. By means of U-shape bolts, install the 2 inclined beam weldment to the front beam of the frame. By means of the 2 pieces of M16×110 bolts and suited nuts and spring washers which are in the bag of parts, attach the towing beam weldment combination to the inclined beam weldment. In case of 36-row configuration, the towing beam base plate shall be installed at first. The beam can rotate and be folded about the shaft.
- 15. Attach oil pipes as per the hydraulic circuit. (a) Attach 4 oil pipe fittings and combination washers (size 18) to oil cylinder. (b) For the oil cylinders on one side, attach a 1200-mmlong oil pipe (90° at one end) near the port of oil cylinder base, and attach a 900-mmlong oil pipe (90° at one end) far from the port of oil cylinder base. Attach a throttle valve

to the other end of oil pipe. Chuck-type straight fitting body G12 and combination washer (size 18) are used for the attachment of throttle valve. Attach 300-mm-long oil pipes to 2 tees. (c) For the oil cylinders on the other side, attach a 1500-mm-long oil pipe (90° at one end) near the port of oil cylinder base, and attach a 1200-mm-long oil pipe (90° at one end) far from the port of oil cylinder base. Attach the oil pipes to the 2 tees mentioned above. (d) Attach a 5000-mm-long oil pipe to the remaining port of each tee. (e) For the two oil pipes, attach a KZ1-10 self-sealing quick coupling to the other end, by means of a combination washer (size 18) and oil pipe fitting. (f) By means of the M10×25 bolts and suited spring washers in the frame and towing beam, as well as the clips which are in the bag of parts, fix the oil pipes to the front beam of the frame and the towing beam.

To use the drill, attach the self-sealing quick coupling of the drill to that of tractor. If the self-sealing quick coupling of the drill disagrees with that of tractor, the user shall provide an oil pipe fitting suited to the self-sealing coupling of tractor and the 5000-mm-long oil pipe.

16. (a) Installation of chains. Install 12A, 74-element chains to the 19-tooth sprocket weldment for drive wheel and the 17-tooth input sprocket. Tighten the chains. (b) Install 10A, 88-element chains to the 15-tooth intermediate sprocket and the 15-tooth and 36-tooth sprockets of fertilizer box shaft (interchangeable in positions). Tighten the chains using the base plate weldment combination of tensioner wheel. (c) Install 10A, 58-chains to the 15-tooth and 36-tooth fertilizer-release roller weldment (interchangeable) and the 15-tooth and 36-tooth seed-release sprocket weldment (interchangeable in positions).

Adjustment to Row Spacing

Row spacing may be adjusted as per cultivation conditions. With reference to the centerline of the frame, adjust the positions of lift arm and draw bar of furrow opener. For the same group of furrow openers, the left and right shall be symmetrically distributed. The front furrow openers shall be staggered from the rear furrow openers. In case of large row spacing, remove redundant furrow openers, lift arms, seed delivery tubes and fertilizer delivery tubes, and block redundant fertilizer-release units and seed-release units.

Adjustment to Seed Rate

Seed rate is mainly adjusted by adjusting speed ratio and the working length of seed-release roller. The two means shall be employed reasonably to fulfil cultivation requirements. In general, speed ratio is selected first, then the working length of seed-release roller is adjusted to achieve required seed rate. Seed rate test: Erect the frame so that the drive wheel is lifted above the ground. Fix the seed rate adjusting sleeve to a certain position. Pour seeds into the seed box. Rotate the drive wheel to fill the seed-release unit with seeds. To receive seeds,

put a container below the seed delivery tube. Manually evenly rotate the drive wheel for 15~20 turns. Weigh the seeds out of each seed-release unit. In case for a certain seed-release unit the actual seed rate greatly differs from the required seed rate, it is permissible to adjust the working length of seed-release roller of that seed-release unit. Formula for calculating Q, the seed rate per mu:

Ω = 667G/DπnB(1+ε) kg/ mu where: G-mass of seeds out of all seed-release units n-----number of turns of drive wheel D-drive wheel diameter (0.95m) B----working width of seeder (m) ε---slippage rate of drive wheel (0.12 ~ 0.15)

If the calculated seed rate deviates from the requirement, adjustment and test shall be carried out again until no deviation exists.

(1) Selection of speed ration and switchover of sprocket

The drive wheel rolls on the ground. The 19-tooth sprocket on drive wheel shaft drives the 17-tooth input sprocket via the first-stage chain. The 15-tooth clutch sprocket weldment drives the 20-tooth clutch driven sprocket via the second-stage chain. The 15-tooth intermediate sprocket drives the 15-tooth or 36-tooth sprocket (interchangeable in positions) via the third-stage chain. The 15-tooth and 36-tooth fertilizer-release sprocket weldment (interchangeable in positions) links the 15-tooth and 36-tooth seed-release sprocket weldment (interchangeable in positions) via the fourth-stage chain. Thus various speed ratios are available to adjust seed rate. Greater speed ratio means greater seed rate. Small speed ratio and great working length of fluted roller may achieve uniform and stable seed (fertilizer) release thus higher operation quality. The transmission schematic:



Table 1 is speed ratio reference table for this drill. Select speed ratios and sprockets according to local cultivation conditions.

					-		
No.	Stage 1	Stage 2	Outp ut	Fertilizer release sprocket	Fertilizer-rele ase speed ratio	Maximum fertilizer rate	Fertilizerreleas e driven sprocket
1	19-tooth 1 -to	1 -tooth 2 -to	-t	15-tooth	0.84	675	36-tooth
2	ı sprock ooth	ı sprock ooth		13-10011	0.04	Kg/Ha	50-10011
3	et	et		26 tooth	0.25	280.5	15 tooth
4				30-100111	0.55	Kg/Ha	13-10011
5					0.84	675 Kg/Ha	15-tooth
6	ь с			15-tooth	0.48	3825	
7	r o o o f					Kg/Ha	36-tooth
8	d 1 s p				0.00	159	
9	0 Û			36-tooth	0.20	Kg/Ha	15-tooth
10	,			15-tooth	0.48	3825 Kg/Ha	15-tooth

Reference Table for Speed Ratio

(2) Adjustment to the working lengths of seed-release roller and fertilizer-release roller

Using a hook wrench, loosen a seed rate adjusting nut and tighten another locking nut to move the seed rate adjusting sleeve, driving seed-release shaft to move axially. Twelve or eighteen seed/fertilizer-release rollers may be adjusted at one time. The working length of left group of seed/fertilizer-release rollers shall be adjusted to be the same as that of the right group. If difference still exists after the adjustment, all working lengths shall be considered. Relation between seed/fertilizer rate (in unit of kg/ha) and working length of seed/fertilizer-release roller is given in Table 2 in case of 24 sowing rows (the resulting speed ratio is 1 and row spacing 150 mm). Note: Seed/fertilizer rates given in the table are for reference only. Actual seed/fertilizer rates shall vary with slippage rate of drive wheel, difference in seed

characteristics and that in fertilizer characteristics. If speed ratio is not 1 the actual seed/fertilizer rate shall be the value in the table times the speed ratio.

Table 2 Relation Between Seed/Fertilizer Rate and Working Length of

Working lengt seed/fertilizer-relea (mm)	h of ase roller	10	15	20	25	30	35	40
Seed/fertilizer rate per hectare (kg/ha)	Seed- release roller (wheat)	99	148	198	248	296	345	396
	Fertilizer- release roller (urea)	198	295	495	596	593	690	790

Seed/Fertilizer-Release Roller

Adjustment to fertilizer rate can be performed by referring to adjustment to seed rate.

Important: After adjustment to seed rate, tighten the adjusting nut to avoid seed rate variation.

Adjustment to Sowing Depth

Sowing depth is adjusted as per cultivation conditions by rotating the hydraulic lift limiter. To increase sowing depth, tighten inwards the shifting fork for adjustment. In case of hard soil hence shallow penetration depth of furrow opener, move the cross washer and M-shape pin to higher orifices to increase pressure applied by the lift bar spring. In case of loose soil hence great penetration depth of furrow opener, reduce pressure applied by the lift bar spring, or remove the M-shape pin to disable the spring, thus obtaining proper sowing depth.

Important: M-shape pins shall be aligned with each other.

Check Prior to Sowing

- (1) Check and tighten all fasteners.
- (2) Apply sufficient lubricating oil to each lubrication location.
- (3) Check that the lift, transmission, seed-release, fertilizer-release mechanisms work normally.

- (4) Check that the seeder is correctly attached to the tractor and the seeder frame remains level.
- (5) Caution! When several drills are attached to each other for combined operation, no rigid attachment may be adopted between them.

Cautions

- Before seed addition, remove foreign substance off the seed box. Do not put a whole package of seeds into the box, to avoid damage to the seed box.
- (2) Trial sowing for 10~20m shall be conducted before normal sowing. The purpose of trial sowing is to observe sowing status. While sowing, observe the seed-release and transmission mechanisms.
- (3) While sowing, in general the seed/fertilizer box shall be filled to 2/3 its capacity.
- (4) Attention shall be given to furrow openers. In case of blockage by mud or stubble, stop the drill to remove it.
- (5) Furrow openers can only be lifted or lowered when the drill is traveling. To lift or lower furrow openers, the operator shall pull the hydraulic control level. Due to interlocking action, the markers will also be lifted or lowered. Be careful not to collide with any persons or objects.
- (6) Do not reverse the tractor or turn it suddenly while sowing.
- (7) No one may sit on the seed/fertilizer box. No seeds or fertilizer may be place on the seed/fertilizer box.
- (8) There shall be no seeds or fertilizer in the box while the drill is being transported. The transport speed may not exceed 5km/h.
- (9) When several drills are attached to each other for combined operation, no rigid attachment may be adopted between them.

Safety rules

- (1) Start and stop the tractor as per requirements. Do not start the tractor until you verify the situation is safe and has received the signal.
- (2) Oil addition, seed addition, seed removal, nut tightening, and adjustment to seed rate are strictly prohibited while the seeder is traveling.
- (3) No one may stand between the tractor and the seeder or sit on the seed/fertilizer box while the seeder is in operation.

- (4) Troubleshooting and repair cannot be performed until the drill has been shut down.
- (5) Install the housing before sprocket operation.
- (6) Do not perform repair or maintenance when the furrow opener is lifted unless it is securely supported.

Daily Maintenance

- (1) Remove mud and other dirt from the drill when each shift ends.
- (2) Check all fasteners for slack when each shift ends. Tighten any fasteners that come loose.
- (3) Check all transmission parts for unsmooth rotation. Check chains for excessive slack. If necessary adjust them.
- (4) For every 8 hours apply grease to each lubrication point.

Important

①For a newly purchased (fertilizer) seeder, particular attention shall be given to the bearings of drive wheel shaft, which shall be lubricated at the first 2~3 days' operation.

2Do not apply lubricating oil to any gears or sprockets while the drill

is in operation.

Lubrication of (Fertilizer)

seeder

Lubricated parts are recorded in the following table.

No.	Lubricated part	Lubrication manner	Number of lubrication points	
1	Drive wheel hub, sprocket for drive wheel	Grease	2 each	
2	Drive and driven sleeves of clutch, clutch swing arm	Grease	2 each	
3	Sleeve chuck of square shaft	Grease	10	
4	Marker hub	Grease	2	
5	Bearing block of seed/fertilizer-release shaft	Grease	4	
6	Seed/fertilizer-release roller	Lubricating oil	24 each	

Storage in Fallow Period

- (1) Clean the drill when the season operation ends.
- (2) Using kerosene, clean the seed-release units, fertilizer-release units, furrow openers, and all transmission parts. Apply lubricating oil or grease to all lubrication points.
- (3) If paint has come off a part, re-paint the part. Restore or replace the damaged or worn parts.
- (4) Store the seeder in a dry, weather-proof shed.
- (5) Insert a wood board under furrow opener and drive wheel.
- (6) Remove the seed/fertilizer delivery tubes. Clean them then store them at natural status.
- (7) Properly store the spare parts and tools of the drill.

Troubleshooting

Trouble	Cause	Solution
1. Excessively shallow sowing depth	Spring pressure is not appropriate to soil hardness.	Adjust the hydrauli Change the position and that of cotter pin.
2. A certain seed/fertilizer- release box does not work.	 No pin is installed in the fluted roller. 2.The seed/fertilizer-release box is blocked. 	 Install the pin. Remove the dirt.
3. Clutch does not work.	The clutch sleeve is blocked or clamped.	Apply grease.

Possible troubles and solutions are given in the following table.

4. Drive wheel slippage	The resistance is too great.	Check all transmission parts.
5. Chain is broken.	1. Transmission stagnation.	1. Check transmission parts.
	2. Excessive chain tension.	2. Adjust the tensioner wheel.
6. No seeds or fertilizer in furrow	Blockage of seed delivery tube	Clean the tube interior.
7. Unsmooth rotation of furrow opener disc	Tight assembly or damage to bearing.	Adjust the assembly or Replace the bearing.

Markers are accessories to this series of seeders. Users may order the markers in purchase contracts. These markers are used for single drill in case of double travels. The purpose is to mark track in the field to guide the tractor in the next travel, thus the spacing between the neighboring rows of two travels meets requirements. These markers do not apply for the combination of two or three drills.

Construction and Installation

Left and right markers are provided. The left and right bracket weldments are fixed to the both sides of rear beam of the frame, and secured by tie-bars to the frame. By means of the minor shaft A of marker, the long pipe weldment is hinged to the bracket weldment. The short pipe weldment may be adjusted as per operation requirements. The bent arms are installed to the both sides of front beam of the frame. By means of wire ropes, the bent arm is attached to the anchor ring of adjustable short pipe weldment, tensioning longitudinally the short pipe weldment to prevent marker bending due to resistance while traveling in field. If the drill is traveling on road, push the left and right long pipe weldment to upright positions and secured to the marker brackets. If the drill is operating in field, level the long pipe weldment again. Adjust the long pipe weldment to desired length. Tension properly the wire ropes.

The marker mainly consists of (1) 2BT12-08-401 ridger disc; (2) BGF-151 hub; (3) short pipe weldment; (4) wire rope; (5) 2BF24-20-601 hoop; (6) long pipe weldment; (7) bracket weldment; (8) BGF-658 minor shaft A; and (9) bent arm. See the figure.



Use and Adjustment

Operator may adjust the marker as per his habit. Loosen the hoop of marker, and adjust the short pipe weldment and wire rope to desired lengths. Tighten the hoop. According to the conditions of left and right front wheels of tractor, operators usually determine the lengths using the following formula.

	<u>B + H + A</u>			B - H	<u> </u>	<u>B+H</u> -	<u>- A</u>
L left =	2	L rigi	ht= B -	2	2 =	2	
where:	B —working wi	dth	B = n×H	Н-	-row spa	acing	n —quantity of

furrow openers A ---front wheel track of tractor

L left-distance from left external furrow opener to left marker disc

L right-distance from right external furrow opener to right marker disc

Maintenance and Storage

- (1) Apply grease to marker disc hub quarterly.
- (2) If the marker is out of service for a long time, remove it from the drill, clean it, and apply grease to its disc. Then store it in warehouse.

Compaction Unit

Compaction units are accessories to this series of seeders. Users may order the compaction units in purchase contracts. These compaction units are divided into two groups, long and short. They are installed alternatively to the rear of frame. The main purpose is to compact the soil about seeds, which is good for seed germination. The compaction unit consists mainly of (1) attachment base; (2) bracket weldment; and (3) compaction roller combination. See the figure.



Warranty

1. This product is under warranty for a period of 12 months commencing on the date of purchase (as written in the invoice).

- Within the warranty period, damage to the drill or deterioration of drill performance due to drill quality is covered by the warranty, if it is verified that the manufacturer shall be responsible for the damage or deterioration.
- 3. This product is not under warranty if the warranty period expires. The user shall pay reasonable expenses for repair

Instruction manual for the storage acre meter



Installation (preparation for use)

1. When using the meter, please connect the meter power supply cable (1) to the tractor trailer connector and turn on the tractor's indicator lights.



Use:

1. Short press the power button to turn on the power, long press the power button to turn off the power. When the power is turned off or power failure automatically save the acreage counting area, there will be no data loss.

2. The acreage counter is displayed as the sown area, unit hm². The acreage counter can measure the sub-total sown area of the planter and the total sown area of the planter, the display is switched by long pressing the "+" button. When the display is subtotal sowing area, the upper left corner of the screen displays "-", the display of sown area with 5 integers and 2 decimals; when the display is total sowing area, the lower left corner of the screen displays "-", the display is a sown to 1 decimal place.

3. Parameter Settings:

(1) Long press "SET" button, the system enters the setting interface. The left side of the screen displays "P1", and the right side of the screen displays the parameters to be set, in which the number of digits to be modified is blinking.

(2) Press the "+" or "-" button, the blinking digit can be added or subtracted; press the "Ok" button, you can move to the next digit of the modification, press the Press "Ok" button, you can move to the next digit modification, press "Ok" button at the same time to save the setting of the current digit.

(3)	Short	press	the	"Set"	button,	you	can
realize	the	setting	of	differen	t paramet	ers	of
P1-P4,	the diffe	erent	parame	ters	are	shown	in
the table	e below:						

4. Subtotal Mileage Zeroing

When in the mu counting work interface, long press "SET" and "OK" button at the same time, can realize the subtotal mu counting area clearing.

Note: After installation and before each use, pay attention to the red LED on the left side of the screen to see if it is blinking, and the LED should blink once for each rotation of the seed discharge shaft. If any abnormality occurs, please check whether the installation of the sensor is normal.

Parameter	Setting Range of Parameter	Explanatory Note
P1	1.80-8.00	Planter width (m)
P2	0.50-2.00	land wheel diameter (m)
P3	0.01-3.00	Speed ratio of seeding shaft to land wheel transmission
P4	0, 1	0-hm² , 1-arce

For example if i want to sow 5 kg per hectare of clover seed how to make calibration setup:

The figure below shows the factory standard gear configuration of the 2BFY-24 seed drill for sowing wheat seeds. In this state, if the small seedbox sowing amount is always greater than the expected sowing amount, the gear ratio needs to be adjusted.



It is very easy and only need to change the **fertilizer sprocket** direction. Change the direction of the double-row sprockets, move the 36-tooth sprocket to the inside and the 15-tooth sprocket to the outside, so that the clutch sprocket can directly drive the 15-tooth sprocket. (during the adjusting the chain size also need to adjusting).



Scale Plate number from 30 to 0, The handle go right sowing amount greater, the handle to left sowing amount smaller.

After the gears are set, just adjust the handle of the seed box according to the desired sowing amount.

Table Reference Table for Speed Ratio and Seeding Amount

	Seed	Seed Meter	Gearbox	Row	Sowing Rate	Row	Gearbox	Sowing Rate
	TValle	Geal	10	Space	46.60	Space	10	23.20
		Blue Gear (bule handle	0	150 mm	43.50	300 mm	0	23.30
			8		38.84		8	10.42
			7		34.18		7	17.09
			6		29.52		6	14.76
1	Lucerne		5		24.85		5	12.43
		full open)	4		20.19		4	10.10
			3		15 53		3	7 77
			2		10.87		2	5 44
			1		3 10		1	1.55
			10		62.14		10	31.07
			9		57.99		9	29.00
			8		51.78	300 mm	8	25.89
		Blue Gear (bule handle full open)	7		45.57		7	22.78
			6		39.35		6	19.68
2	Canola		5	150 mm	33.14		5	16.57
			4		26.93		4	13.46
			3		20.71		3	10.36
			2		14.50		2	7.25
			1		8.28		1	4.14
			10		54.37		10	40.78
		Blue Gear (bule handle full open)	9		50.75	200 mm	9	38.06
			8		45.31		8	33.98
			7		39.87		7	29.90
	~		б	1	34.43		6	25.83
3	Clover		5	150 mm	29.00		5	21.75
			4		23.56		4	17.67
			3		18.12		3	13.59
			2		12.69		2	9.51
			1		7.25		1	5.44
			10	150 mm	730.11	250	10	312.90
		Yellow Gear (Yellow handle full open)	9		681.44		9	292.04
	Soybean		8		608.42		8	260.75
4			7		535.41	350 mm	7	229.46
			б		462.40		б	198.17
		5		389.39		5	166.88	

Table Reference Table for Speed Ratio and Seeding Amount

			4		316.38		4	135.59
			3]	243.37]	3	104.30
			2]	170.36]	2	73.01
			1	1	97.35	1	1	41.72
_		Yellow&Blu e	10	150	466.03		10	279.62
2	Barley	Gear	9	mm	434.96	250 mm	9	260.98
		(Yellow&Blue	8		388.36		8	233.01
		handles full	7]	341.75	1	7	205.05
		opony	б]	295.15		6	177.09
			5]	248.55]	5	149.13
			4]	201.95]	4	121.17
			3	1	155.34	1	3	93.21
			2	1	108.74	1	2	65.24
			1	1	62.14	1	1	37.28
			10		217.48		10	135.92
			9	1	202.98	1	9	126.86
			8	1	181.23		8	113.27
		Yellow&Blu e	7		159.48	1	7	99.68
		Gear	б	150	137.74		6	86.09
6		(Yellow&Blue	5	mm	115.99	240 mm	5	72.49
		open)	4	1	94.24	1	4	58.90
			3	1	72.49	1	3	45.31
			2		50.75	1	2	31.72
	Ryegrass		1	1	29.00	1	1	18.12
	Seed	Seed Meter	Gearbox	Row	Sowing Rate			
	Name	Gear	Pointer	Space	(kg/hm ²)			
			10		318.45			
			9		297.22			
			8		265.38]		
		Yellow&Blu e	7]	233.53]		
_		Gear	6	150	201.69]		
7	Oats	(Yellow&Blue	5	mm	169.84]		
		open)	4]	138.00]		
			3]	106.15]		
			2	1	74.31	1		
			1	1	42.46	1		
			10		652.44	1		
8	8 Wheat	Yellow&Blu e	9	150	608.94	1		
	Gear	8	1	543.70	1			

(Yello	w&Blue 7		478.45
hand	lles full 6]	413.21
	5		347.97
	4		282.72
	3		217.48
	2		152.24
	1		86.99

for example if i want to sow 70kg per hectare of oats how is the gearbox to be setup:

1. From the table above, found the "Oats" seed. When the Gearbox Pointer pointed towards "2", and the seeding rate per hectare is 74.31kg per hectare, which was close to the requirement 70kg per hectare.

2. According to the request of the above table, Yellow&Blue Gear (Yellow&Blue handles full open)



3. According to the request of the above table, Row space is 150mm distance.

4. Put oat seeds into the seed box. keep enough seeds for the **3 testing seed meters**, **block** the other seed meters. Remove the 3 testing seed meter seed tubes, put 3 containers ready to receiving the seeds dropping from the 3 testing seed meters. (not need fullfilling all the seed meters with seeds).

5. Use a tractor to lift the seeder off the ground, and check if the transmission system is functioning properly.

6. Fix the gearbox Gearbox Pointer at position "2", rotate the ground wheel to fill the 3 testing seed meters with seeds. 7. Mark on the drive wheel, rotate the drive wheel evenly by hand for 20 turns and **weigh** the seeds discharged from the 3 testing seed meters. **The weight is the actual G**.

8. Calculate the experimental seeding rate (substituting the experimental data into the seeding rate calculation formula)

QD _____10000DG

 $\Box \Box D \Box n \Box B \Box (1 \Box \Box)$

where : Q----seed rate per hectare, kg/hm2 = 70kg

G-----wight of seeds out of all "3" testing seed meters, kg

D——drive wheel diameter(0.71m)

∏-3.14

n—number of revolutions of drive wheel 20 turns

B—— working width of Seeder, m "when weight drop seeds from 3 seed meters = 3 x 0.15 (row space) = 0.45m = B"

" when weight drop seeds from 5 seed meters = 5×0.15 (row space) = 0.75m = B"

 $\delta-\!\!\!\!-\!\!\!-\!\!\!-\!\!\!-$ slippage rate of drive wheel, $\delta=\!0.11\text{-}0.15$ (row space 150mm, slippate rate is 0.11)

Based on the calculation results:

When oats seed rate need 70kg/Ha, the "G" should be around 0.156Kg.

70 = 10000 x G / 3.14 x 0.71 x 20 x0.45 x (1+0.11)

G = 70 x 3.14 x 0.71 x 20 x 0.45 x (1+0.11) / 10000 G = 0.156kg

A: If the actual seed weight from 3 testing seed meters is 0.156kg, then the calibration is finish.

B: If the actual seed weight from 3 testing seed meters less than 0.156kg, adjust the Gearbox Pointer to a larger value. C; If the actual seed weight from 3 testing seed meters larger than 0.156kg, adjust the Gearbox Pointer to a smaller value.



9. Repeat the above experiment until it meets the seeding requirements.