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Adjustment and maintenance of seeding and planting equipment

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Seed cum fertilizer drill cum planter

This machine can be used for sowing grains like wheat, maize, groundnut, peas, cotton, sunflower etc. The planting discs plates for different crops can be changed without dismantling the seed hoppers main shaft. Fertilizer can be used simultaneously according to requirement. Furrow openers have been mounted on frame using U Clamps. These can be replaced with ridgers and bed shapers for converting it bed planter.





Adjustments in MulticropPlanter

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a) Furrow openers and ridgers

- Furrow openers can be adjusted by removing or raising few furrow openers with shanks according to the number of rows and spacing in different crops to be raised on the top of the raised beds (Fig: 2.) .
- Three ridgers have been provided to make two beds in a single pass. Most of the farmers have tractors in the range of 35-45 HP and 3 ridgers can easily be pulled by these tractors. (fig 3)
- Height of the beds in wheat varies from 15to 30 cm and it can be further adjusted. Whereas, the width of furrow and top of the bed generally remain 30 cm and 37 cm respectively. However, it can be varied from 20to 40 cm by adjusting the wing width. (Fig: 4.)



Fig: 2. View of ridger spacing



Fig: 3. View of ridgers

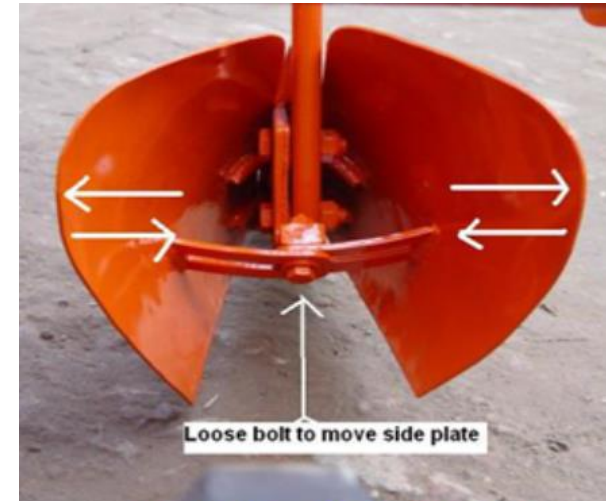


Fig: 4. View of backside of ridger



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Adjustments in MulticropPlanter

b) Adjustment of the bed shaper

Bed Shaper should also be adjusted in the upward and downward position for shaping the bed. Just loosen the bolt and lift the shaper towards the upward position if the bed little higher is required than higher the nut and bolt again as well as for a bed at the lower position, loosen the nut and bolt again and shift the shaper to the downward direction and tighten thenuts and bolts





Adjustments in MulticropPlanter

c) Seed metering speed adjustments:

As shown in Figure 6 & 7 select appropriate, select appropriate combination of gear / sprockets for getting desired speed of rotation of seed & fertilizer metering shafts.

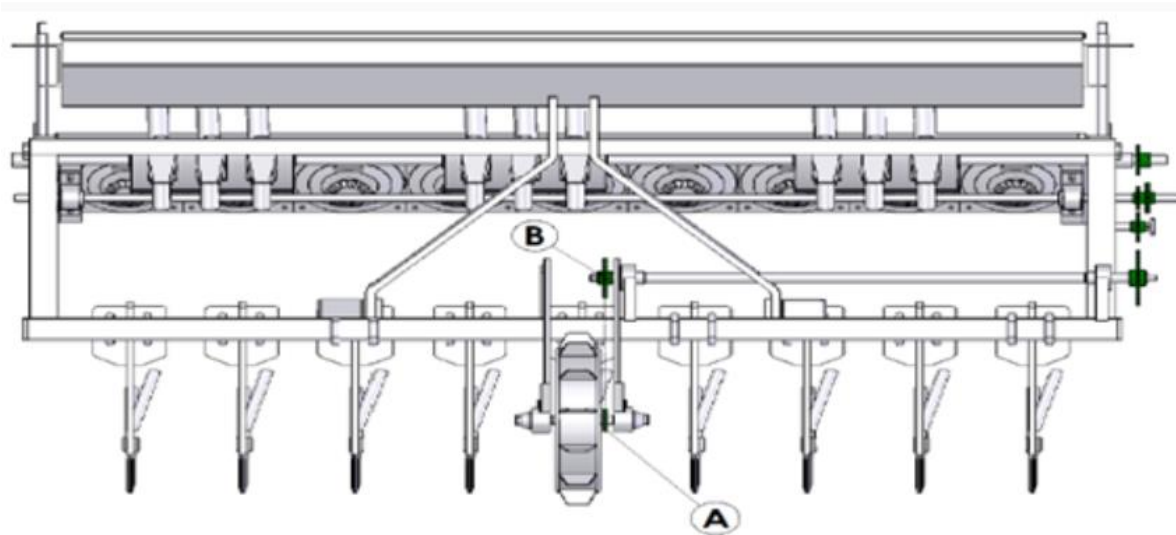


Fig: 6. View of backside of Planter(Courtesy: Dasmesh Mech. Works.)

A	11 Teeth sprocket
B	20 Teeth sprocket



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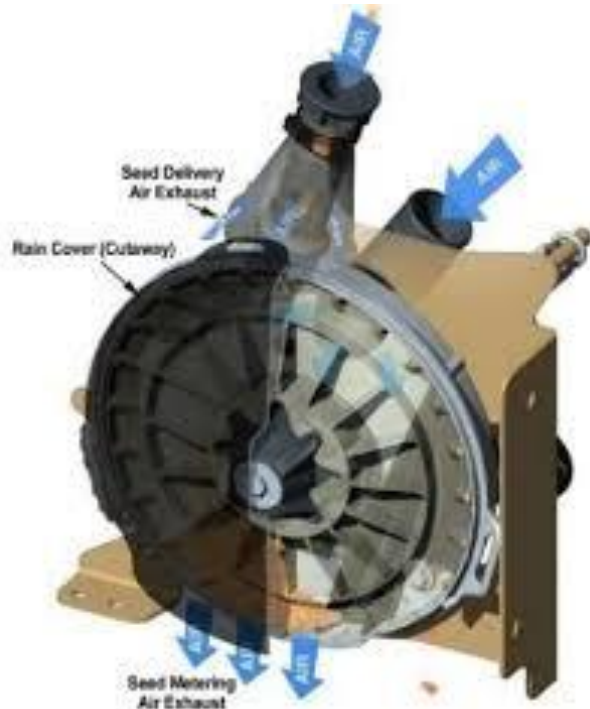


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d) Seed rate adjustments:

- a) In order to adjust the inclined plates we have to put washer between the nylon plate and housing on the shaft so that the face of plate should not have any gap between the face of housing.
- b) The function of press plate is to provide proper pressure on the ring.
- c) Adjust the nut as per required pressure on the ring.





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Adjustments in Multicrop Planter





Planting operations

- Seed should be of good quality and free from dirt and dust.
- Fertilizer should not have clods. Clods should be properly broken to uniform size for free flow of fertilizer.
- All the nuts and bolts, and springs should be thoroughly checked, defective parts should be replaced and nuts/bolts properly tightened.
- Seed and fertilizer boxes should be thoroughly cleaned.
- Multi crop rings shaft should move freely, otherwise the plates can damage the seed.
- Seed plates should be thoroughly cleaned and blocked if any, must be removed.
- Ensure that plastic pipes do not have excessive bend. This will block the free flow of seed and fertilizer in tubes.
- Chain sprocket of metering mechanism should be properly aligned. Appropriate tension in the chain may be kept for free movements of seed and fertilizer metering shafts. If there is any noise during operation, stop the machine and check it.
- Furrow openers should be fitted on the frame according to the requirement (row to row distance) of the crop. There should be no crossing or twisting of furrow openers.
- Fill the seed and fertilizer boxes and calibrates the machine. Ensure that the seed drill is set at desired seed and fertilizer rates. This will ensure proper metering of seed and fertilizers and result in excellent germination, good crop stand and higher yield.



a) Precautions for use of inclined plate planter

- Field should be leveled and well prepared before operation.
- Do not allow drying up of the upper soil layer before sowing, otherwise, seed will have to be placed deep and it will affect germination.
- Mechanical weeding or interculture with this machine (after making minor alterations in the positions of its tines) is possible in the standing crop.
- Special care should be taken regarding depth of seeding; otherwise there may be problems in seed germination.
- Attack of termites may be another problem in sandy areas; hence, special attention or precaution should also be taken in this regard.
- Care should be taken by the farmers to balance the machine before starting sowing.
- All inclined plate seed boxes should be in straight position.
- Depth of sowing should be properly adjusted by depth control wheel.
- Seed rate will be increased & decreased by changing the sprocket sets.



b) Precautions for use of raised bed planter

- i) Field should be leveled and well prepared before making beds.
- ii) Beds are made well in advance and field irrigated to encourage germination of weeds before sowing and then germinated weeds can be controlled either mechanically by reshaping the beds
- iii) Do not allow drying up of the upper soil layer before sowing otherwise seed will have to be placed deep and it will affect germination.
- iv) Mechanical weeding or interculture with this machine (after making minor alterations in the positions of its tines) is possible in the standing crop, if it has been shown in two rows/ bed.
- v) Special care should be taken regarding depth of seeding; otherwise there may be problems in germination.
- vi) Attack of termites may be another problem in sandy areas; hence, special attention or precaution should also be taken in this regard.



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Maintenance and Repair of Seeding Machines

a) Seed and fertilizer boxes

The boxes should be thoroughly cleaned as these may rust very fast due to environmental moisture. This will damage the boxes and machine will not be useful for the next crop sowing season. The boxes must be cleaned asunder:

- i) Raise the machine above ground so that the drive wheels move freely.
- ii) Remove seed and fertilizer from boxes.
- iii) Open the flow gates of seed and fertilizer cups.
- iv) Rotate the drive wheel till the seed and fertilizer from different seed and fertilizer cups are emptied. Clean the boxes and cups with the help of a cloth or brush.
- v) Wash the machine rollers/seed/fertilizer boxes with diesel to avoid rusting.
- vi) Apply lubricating oil at appropriate places (bushes and sides of metering rollers).



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Maintenance and Repair of Seeding Machines

b) Drive/ power transmission system.

- i) Drive wheel should move freely. If it is jammed, then apply grease or put oil in its bushes. If axle of wheel is bent or worn out, replace it.
- ii) Drive wheel should be round, if it is bent then repair it.
- iii) Sprockets of drive wheel and feed shafts (seed and fertilizer boxes) should be properly aligned.
- iv) All sprockets should be properly tightened on their shafts so that these may not move freely on these shafts.
- v) Feed shafts should move freely. If these are jammed due to rusting, then clean and apply lubricating oil/grease in the bushes.
- vi) Bent drive shafts should be repaired or replaced.
- vii) Seed and fertilizer boxes should be thoroughly cleaned for free movement of feed shafts.
- viii) Chain and idler sprocket should be properly tightened so that proper chain tension is maintained and mechanism moves freely.
- ix) Worn out parts, loose, broken and worn out bushes should be replaced.



c) Seed metering mechanism

Usually Inclined plate type seed metering mechanism is used in this seeding machine. It should be repaired and maintained as under.

- i) Take the seed out of the small seed boxes by opening the lower flow gates.
- ii) Remove the nuts/bolts of the ring from the base plate.
- iii) Remove the ring from the shaft.
- iv) Check the rings & spoons attached to the rings.
- v) During refitting of rings, it must be ensured that all the rings are at equal distance in the seed cups. If distance is different, then adjust it by losing the bolt on the base plate bush to achieve equal distance.
- vi) Complete system should move freely and rotate the sprocket till appropriate seed rate achieved from all the rings.



d) Fertilizer metering mechanism

- i) After seeding a crop, fertilizer should be removed from the box and whole system should be cleaned with the help of brush or cloth.
- ii) If the system is jammed due to corrosion and rusting, cell of the fertilizer feeder must be removed and cleaned.
- iii) All the plastic tubes/ pipes should be properly open.
- iv) Lever on both side of the fertilizer box should move easily. This helps in proper metering of fertilizer.
- v) Tighten all nuts and bolts of the mechanism.



e) Seeds and fertilizer tubes

These are mostly plastic tubes connected to seed/fertilizer cups and their lower ends are connected to seed boots.

- i) Tubes should be connected to seed/fertilizer cups with the help of clamps so that these may not come out during field operation.
- ii) Tubes should be protected from bending and breakage.
- iii) Old/bent tubes should be replaced.
- iv) Excessive bend in the tubes should be avoided otherwise the bend will cause obstruction in free flow of seed/fertilizer and results in non-uniform application of fertilizer in the field.

f) Furrow openers

Furrow openers are attached to main frame with the help of U-bolts. The furrow openers wear out or twist very fast. Therefore, these should be repaired frequently. The worn-out ones should be removed /replaced as and when required.