

Self-propelled electric battery Feeding roller type seeder

JDEV-1

Instruction Manual



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Chungcheongbuk-do, Korea.

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Contents

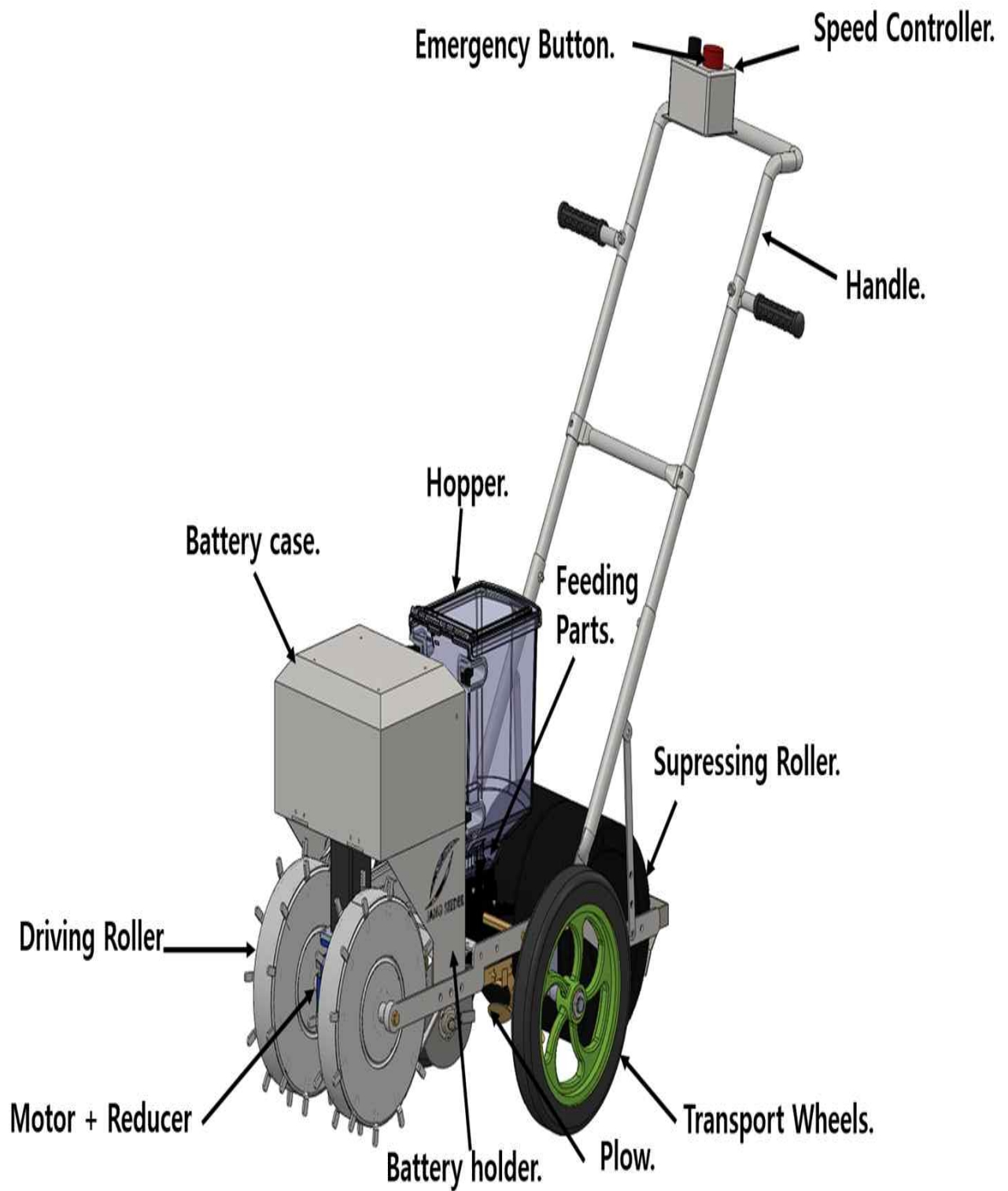
1.	Product specification -----	03
2.	The name of each parts -----	04
3.	How to use the seeder -----	06
4.	How to adjust the spot seeding spacing -----	9
5.	Seeder operation tips -----	10
6.	Worker regulation -----	12
7.	Clothes, protect equipment wearing and protection device -----	14
8.	Compliance with the scope of machine and parts after operating -----	15
9.	Precautions of third parties -----	16
10.	Contents for material used. such as battery ----	17
11.	User's Guide -----	18
12.	Parts list -----	20

We appreciate your purchasing our seeder. Please carefully read instructions first before you actually operate our battery seeder. This manual includes cautions and how to operate our seeder safely. After reading it, be sure to keep this manual near the seeder.

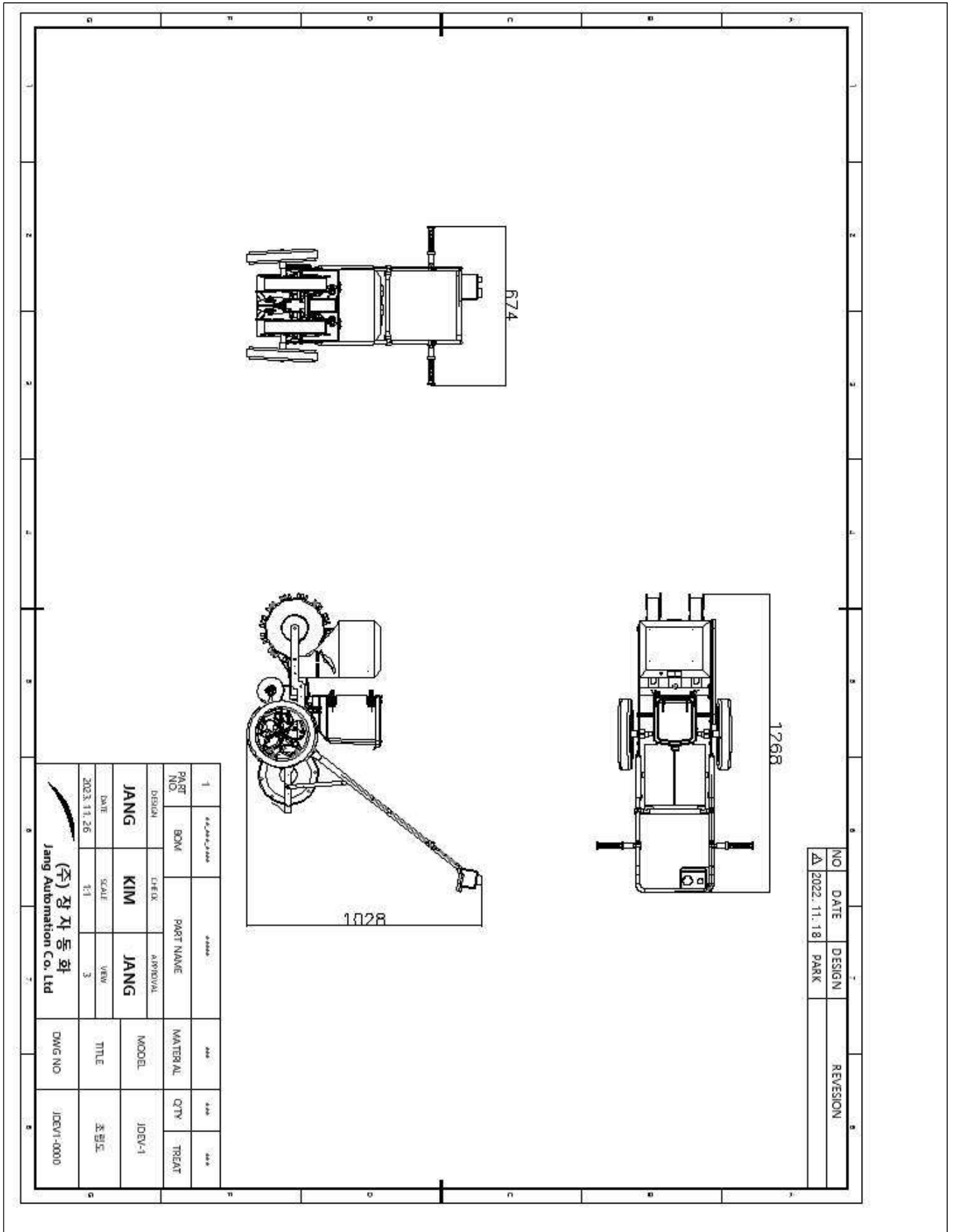
1 Production Specification

Item	Self-propelled battery type seeder
Model Name	JDEV-1
Row number and Seeding type	1row, Spot Seeding Type
Length(mm)	1,267
Width(mm)	674
Height(mm)	1,028
Inter row (Spacing)	There is no inter row spacing due to 1 row
Soil covering plate width(mm)	120mm
Driving roller & suppressing roller width (mm)	56(Driving roller)*2pcs, 130.68(Suppressing roller)
Weight (kg)	27(Bare frame)
Battery (Rated Power, Manufacturer)	Li-ion 2pcs (Maximum 4pcs applicable), Rated Power: 18V, 5.0Ah, 90Wh, Producer: MAKITA
Hopper Capacity	7.5ℓ
Feeding method	By using the feeding parts as groove adjustable type, the seeds can be changed to suit.
Driving method	Driven by a driving roller mounted on a battery and motor
Power transmission method	Driven by battery and motor type
Spot seeding spacing	The sprocket exchange method (11 steps)
Seeding Depth	Depth adjustment : Maximum 30mm
Applicable seeds	Beans, barley, wheat etc

2 The Name of each parts



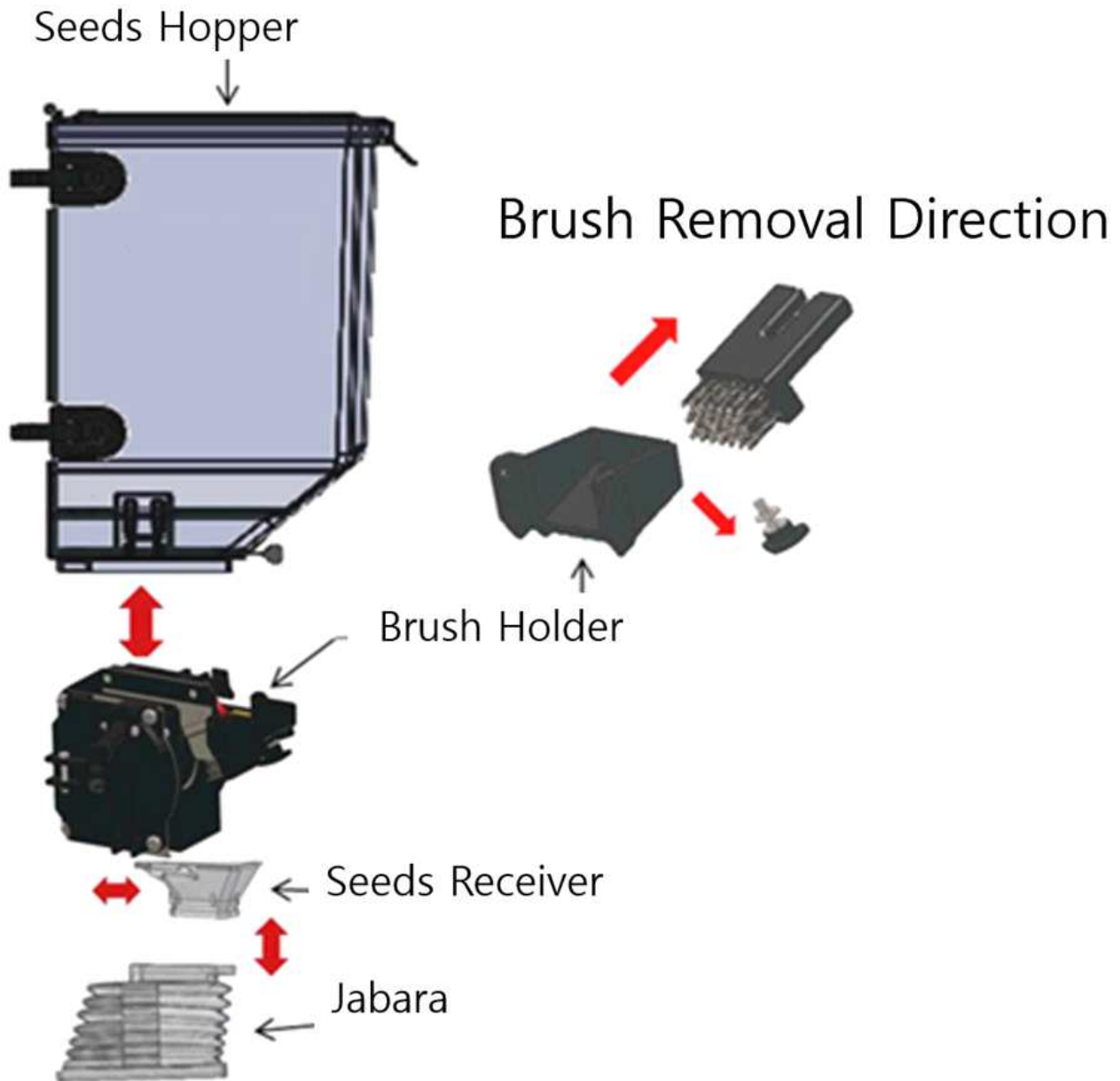
[Photo 1 – Name of Parts]



[Photo 2 – Assembly drawing and parts composition and layout]

③ How to use the seeder

1. Hopper (Seeds Feeding Part) usage and name of each parts



2. Inspection before work

- ① Check whether the bolts and nuts of each part are loose or missing.
- ② Seeds must be selected to prevent contamination of other foreign substances such as stones or metals from entering the seeds.
- ③ Check occasionally to see if the seeds are distributed and feed evenly.
- ④ Brushes is consumables, so check them occasionally.

(If it is worn, it must be exchanged for a new one.)

- ⑤ For seeding covered pavement, carefully crush the soil and finish it evenly.
- ⑥ If the work speed is too fast, precision decreased.

The seeding speed is 0.5~0.7m/sec.

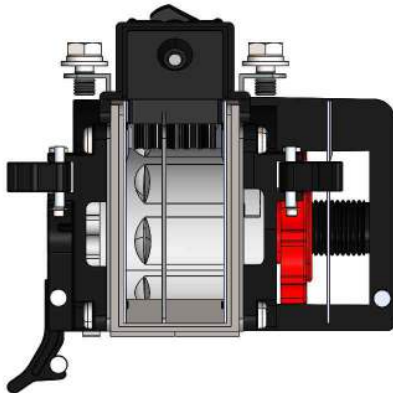
- ⑦ If possible, do not soak seeds in water. Never wet coated seeds.

3. Brush adjustment

- ① Set the brush evenly so that it does not touch the roll (gap is 0 to 0.5 mm).
- ② The brush is a consumable item, so check it occasionally. If it is worn, replace it with a new one because the discharge amount increases.

4. Adjustment of feeding part

- ① Turn the dial on the dispensing part counterclockwise to increase the seed amount.
- ※ Do not turn the dial in the "small" direction while adding fertilizer or seeds.



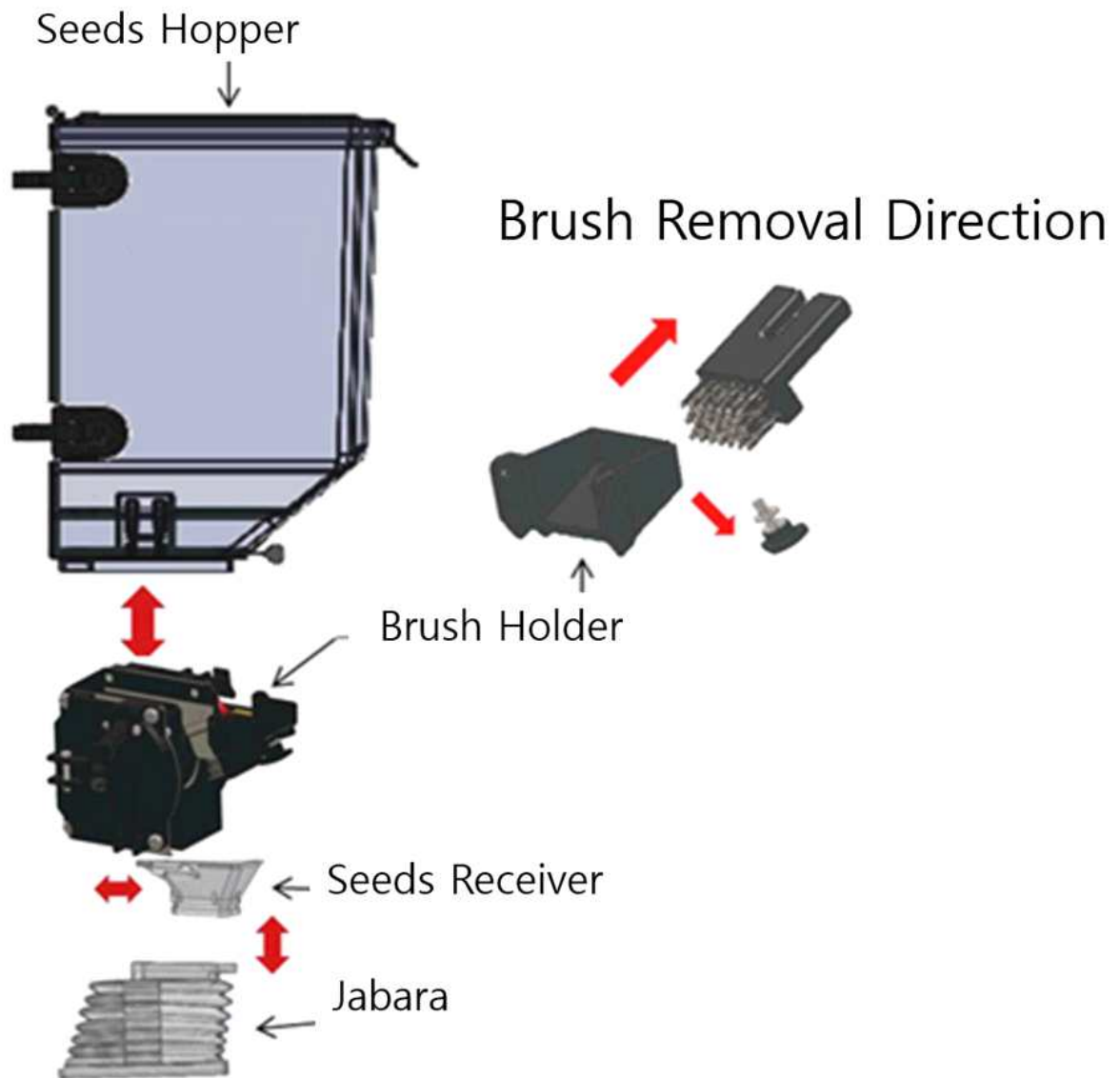
- Please set the seeding amount correctly.

※ The opening moves by 2mm with one rotation of the dial. With a half-turn, the saw blade shape of the dial becomes 10 blades, so the opening angle is 0.1 mm for each blade. Since the opening angle of the dot mark can easily become inaccurate depending on the viewing direction and roll, a sure method is to first set the opening angle to "0" and adjust the opening angle based on the number of rotations of the dial. Even though it is a bit cumbersome, recommend this method.

5. Maintenance inspection

1. The parts shown below can be disassembled without tools. When the hopper is removed, the brush is also removed as shown below.

It is convenient for maintenance and inspection.



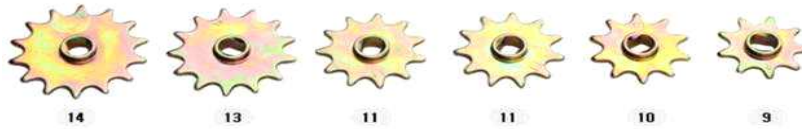
2. After completing work, completely remove seeds and fertilizers from the hopper and wash them.

3. Remove foreign substances from the brush holder.

4. Apply oil to rotating parts, etc. However, please do not add oil to the roll.

4 How to adjust the spot seeding spacing

1. Sprocket components based on spot seeding spacing



The seeding interval (Intra row) is determined by the combination of chain gear teeth (adjustable in 11 steps) and the number of holes in the seeding roller. The purchased product includes chain gears with teeth numbers of 9T, 10T, 11T (2 pieces), 13T, and 14T

2. Spot seeding spacing standard table

Spot Seeding Spacing Standard Table

How to check the spot seeding criterion table

- 1 Check the number of holes in the seeding roll/disc to be applied.
- 2 Find the desired spot seeding spacing.
- 3 Check the number of teeth of the corresponding seeding roll/disc side and wheel side chain gear.

Spot Seeding Spacing Standard Table(cm)												
		Teeth number of Chain gear										
Seeding roll side		14	14	13	13	11	11	10	11	10	10	9
Wheel side		9	10	10	11	10	11	11	13	13	14	14
Hole number of seeding roll	4 Holes	38	35	32	29	27	25	23	21	19	18	16
	6 Holes	26	23	21	19	18	16	15	14	13	12	11
	8 Holes	19	17	16	15	14	13	12	11	10	9	8
▶ Depending on the soil quality or speed, the spacing may not be consistent.												

3. Consumables

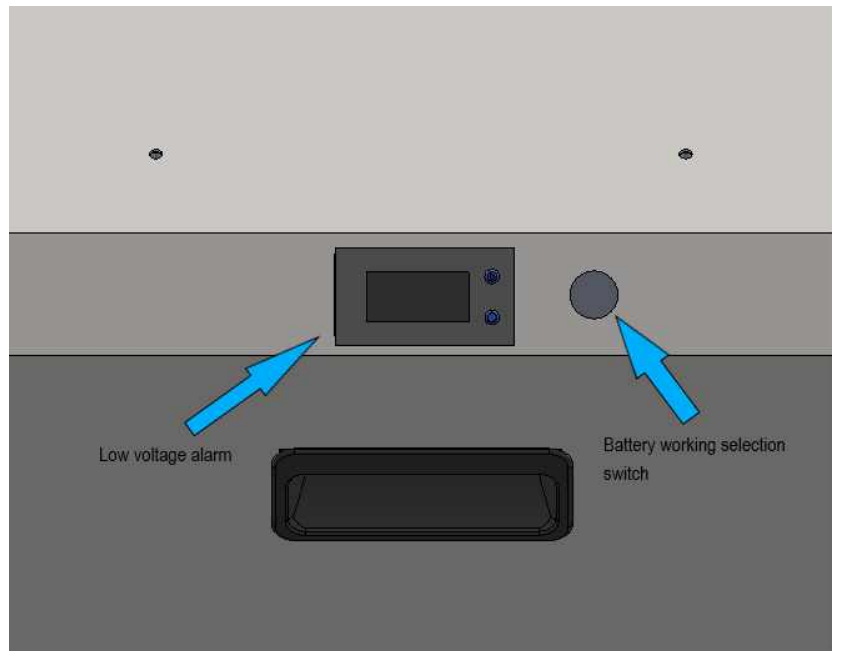
The following parts are consumables. Inspect before work, and replace if there are any abnormalities such as wear.



Brush

5 Seeder Operation Tips

1. Battery assembly and power connection



Speed Controller

- ▶ Open the case and match the battery adapter insertion part to the shape of the battery. 2pcs of batteries are composed as 1set and the 1set is only worked during seeding, NOT 3sets of batteries working at the same time.

Caution

: If the battery adapter and battery manufacturer do not match, insertion will not be possible, so do not force insertion.

- ▶ Turn the battery working selection switch toward the battery you want to select.
- ▶ Select the speed controller from 1 to 5, not stop.
- ▶ If the voltage level appears on the low voltage alarm and the driving roll operates, you can confirm that the power is connected.
- ▶ The recommended battery specification is 5ah for (18V or 20V).
- ▶ When the battery power reaches 0%, it cannot be operated manually, so the battery must be replaced when the low voltage alarm sounds.

2. Speed Controller Operation (5 Steps)



- ▶ If you turn the volume-type speed controller from left to right, the speed increases.
- ▶ Forward: Using this, the user drives according to the desired speed among 5 levels of speed control.
- ▶ Stop : Turn the speed controller from right to left to STOP to stop.
- ▶ Emergency **RED** button: When driving, if you want to stop in an emergency, press the red button on the left. If you want to drive again, turn to the right so that the pressed Emergency **RED** button moves up.

3. How to rotate the return point when sowing

- ▶ When sowing, stop the machine at the end of the return point using the speed controller, press the handle, lift the drive roller (front wheel), rotate about 130 degrees to the desired seeding section, then lift the handle and sow in the next seeding section with the pressure roll lifted. Operate the speed controller again to start seeding.
- ▶ When moving the seeder after sowing is finished, the hopper must be detached or stopped in operation to prevent seeds from being discharged. (Seeds are discharged as the drive roll rotates, so it must be stopped using the speed controller and rotated only with the suppression roll.)

4. Tips for Moving

- ① Installation and removal of auxiliary wheels
 - ▶ Lift the handle and keep the suppression roll lifted.
 - ▶ Insert and install the axes of the auxiliary wheels into the grooves of the auxiliary wheel brackets on the left and right sides, respectively. (When sowing seeds, detach and use the auxiliary wheels.)
- ② Movement (forward, backward, left and right direction control)
 - ▶ Lift the drive roll (front wheel) and move only with the moving wheels. (The drive roll does not move unless the speed controller is activated.)

6 Worker Regulation

1. Worker's Health Care

- ① Farming workers need a enough rest and regularly take health check. If the workers have disease, they should see a doctor or professional health counselor and carefully make working plan not to lead to accidents.
- ② Workers should work for less than 8 hours in a day and take rest every 2hours not to take fatigue.
- ③ Workers should have stretching before and after work. Workers should work without overload in accordance with workers' condition and weather's condition. If many people work together, they should discuss how to work in advance.
- ④ If working process is not smooth because of weather or state of paved road, do not do it to excess. It can cause accident. Make working plan with taking time.

2. Restriction on Worker

Following workers must not use agricultural machines and working on the high place and not order.

- ① Drunken workers.
- ② Workers who have problems to work by taking medicine.
- ③ Workers who is difficult to work because of disease, wound, fatigue etc.
- ④ Workers who is in pregnancy or can be affected to pregnancy or giving birth.
- ⑤ Underage
- ⑥ Learners(Except with an expert)

3. Safety label

- ① Do not take off the safety labels on the machine.
- ② Do not touch parts rotating or moving.
- ③ Please seeding in straight.
- ④ Do not arrow to approach near working area. Especially keep an eye on children.
- ⑤ Do not go under the machine or not put your foot under wheels.
- ⑥ Do not take off the covers

4. Inspection during work

- ① When inspecting the work machine, do so after confirming that the power has been cut off.
- ② Work while checking the consumption status of the seed container.
- ③ The motor is high temperature, so be careful of burns.
- ④ Properly manage and use tools required for inspection and maintenance properly.
- ⑤ Be sure to reinstall the safety cover that was removed after inspection.

7 Clothes, Protect equipment wearing and Protection device

1. Clothes and protect equipment

- ① Wears proper clothes and hat and protect equipment not to take accident with agricultural machines such as hair or clothes are rolled.
- ② It is very dangerous action to wear loose clothes or gloves to repair the machines.
- ③ Put on safety shoes which is proper your feet and get slip-resistant.
- ④ Long hair can easily be rolled into the rotating machine so tie the long hair or put it in the hat.
- ⑤ Do not wear valuables while working.

2. Improvement of working environment

- ① Workers check working environment or dangerous area in ordinary day and work in safe and effective way by reviewing working way or marking the dangerous area.
- ② Agricultural machines are often rolled over at waterway or ditch been washed away, improve working environment which can often happen accident such as a corner of blind spot, sharp curve, narrow bridge, slippery road.
- ③ If you found hazards, immediately improve the hazards. To reduce the hazards being dotted, workers have to respect following Agricultural machine driver must take enough space to rotate in safety not to close to the waterway or the ditch.
- ④ Cuts grass around edge of farm road which has been hazard so make sure to see ditch or farm road.
- ⑤ Gets rid of branches, stumps and other things to see clearly driving.
- ⑥ When working in dangerous, reduce worker's worries and work with a assistant who let the worker know dangerous state. Not to work alone. If you have no choice to work alone, must inform your family where and what you work. It helps to find you as soon as possible when you are in troubles.
- ⑦ When commission, the consignor must inform the assignee hazards and dangerous area before starting work.

8 Compliance with the scope of machine and parts after operating (Scope of application and handling precautions)

1. Application Range

- ① It is applied to a battery-type seeder that can be controlled and operated by the operator.

2. Keeping and reading the instruction

- ① Read the instruction manual carefully and become familiar with the functions, precautions for use, use of safety devices, and ways to avoid danger.
- ② Store the instruction manual in a certain storage location so that it can be taken out and read at any time when necessary.
- ③ For long-term storage, remove the battery.
- ④ Clean mud, dust, etc. on agricultural machinery to prevent rust and corrosion, remove moisture with a dry cloth, and then wipe with a cloth soaked in oil.
- ⑤ Apply grease to prevent rust on chains, wires, rotating parts, etc., and paint the car body where the paint has peeled off.
- ⑥ Inspect each part for wiring, loosened bolts and nuts, etc., and immediately repair any defective parts.
- ⑦ Agricultural machinery should be stored indoors as dry as possible. If indoor planting is difficult, cover and store on a flat surface to avoid sunlight, rain, and snow.

3. Prohibition of modification and use of station for other purpose

- ① Do not use for any purpose other than its original purpose.
- ② Do not remodel. In particular, do not remove the safety device.

9] Precautions of third parties

1. Third party precautions

- ① Due to the nature of agricultural machinery vehicles, the noise level is high, making it difficult for drivers to perceive the surrounding environment. You should always check your surroundings and get into the habit of walking slowly.
- ② Because there are many trees or grass on the road, agricultural vehicles that were hidden from view may suddenly appear in front of you and cause an accident. Therefore, especially for children, active protection and safety education should be provided to prevent accidents due to contact with parked agricultural machinery.
- ③ Consideration of women, young people, and the elderly Pregnant women and young people are not asked to do high-risk work or handle chemicals, such as handling heavy objects, working at heights, or working in environments with high vibration.
Additionally, pregnant women and minors are not asked to work late at night.
- ④ Comprehensive safety education, including daily health care, should be provided to the elderly, taking into account the decline in mental and physical functions, such as loss of agility, as one ages. Additionally, if possible, encourage elderly people to perform agricultural work through consignment rather than doing it themselves. Work sites should be made as safe and comfortable as possible for anyone to use, and the use of elderly people should be taken into consideration when selecting agricultural machinery.

2. Consideration for surrounding environment

- ① Consideration for those around you
When engaging in agricultural work, pay attention to ensuring sufficient safety, taking into account the risk to other workers and people around you. In particular, if there are children nearby, it is necessary to give sufficient precautions in advance to ensure that they do not approach agricultural machinery in operation.
- ② Consideration of surrounding environment, etc.
Necessary measures must be taken by carefully considering the selection of work machinery and weather conditions to prevent noise, vibration, dust, etc. generated during work using agricultural machinery from affecting nearby residents or the environment.

10 Contents for material used, such as battery

1. Handling of agriculture machinery, etc.

① Required standards

All farm equipment must be managed and stored cleanly by washing, disinfecting, etc. to prevent contamination with hazardous substances.

② Recommended standards

Records related to the use of farm equipment must be maintained.

All farm equipment must be stored in a place where it is easy to clean, maintain hygiene, and drain.

③ The battery must be removed and stored to prevent shortening of battery life.

④ The motor driver is not completely waterproof, so it must be stored indoors after sowing.

11 User's guide

→ For your safety, please read this in advance.

1) Matters before use

A) Matters related to machine assembly

: When connecting the handle and main body, connect the jack as well.

B) Matters related to the worker's health status and worker restrictions

: If you have health problems, avoid sowing outdoors for long periods of time.

C) Matters related to clothing, wearing protective cloth, protective devices, etc.

: Do not open the battery case too forcefully.



D) Precautions regarding third parties, especially children

: A guardian must always be with the child when driving.

E) Matters related to machine transportation

: When loading or unloading trucks, etc., use transport wheels and a ladder.



F) Matters related to the markings specified on the main body, etc.

: Since it is self-propelled, accidents may occur due to constriction, so the driver must always look ahead.

- 2) Matters related to inspection before working
 - A) Inspection preparation and methods required for safe use
 - : Because it is electric, wiring, etc. may be exposed to water or the battery may not be charged. Please check if it worked.

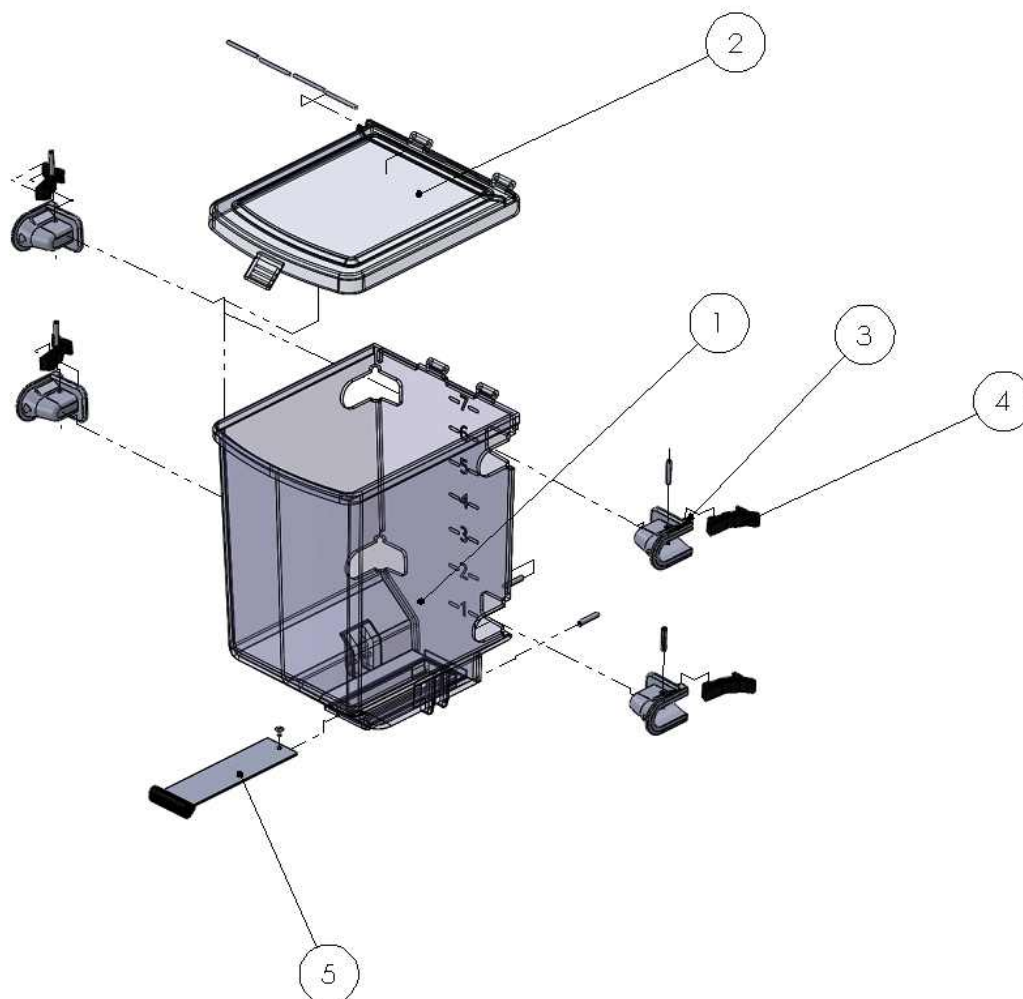
- 3) Matters regarding caution during work
 - A) Matters regarding the correct use method and posture of the machine
 - : Adjust the handle to suit the height of the worker who will be using it for a long time.
 - B) Matters that call attention to people around other than the worker
 - : Do not allow people to pass along the driving path of the seeder.

- 4) Matters related to after use
 - A) Matters regarding major inspection points and inspection methods
 - Check if the fuse is normal.
 - Check if there are any stones or foreign substances stuck in the protrusions of the driving roller.
 - B) Matters related to treatment and disposal of used materials, etc.
 - Remove used batteries and store them indoors in a cool place.
 - Please store used seeder indoors.
 - C) Precautions for long-term storage
 - Please store it indoors as it is not completely waterproof.

- 5) Other necessary information
 - A) Matters related to inspection and repair that workers must not perform
 - When checking the wiring of the motor driver, please contact our head office.
If the wiring is twisted, it won't work.
 - B) Matters related to contact and inquiry about the machine
(Product name, type, company name, address, phone number)
 - Product name: Battery-type leafy vegetable seeder, 3rows
 - Model Name : JDEV-1
 - Company name: Jang Automation Co., Ltd.
Address: 2004, Nangseong-myeon, Danjae-ro, Sangdang-gu, Cheongju-si, Korea
Phone number: 82-(0)43-298-0076

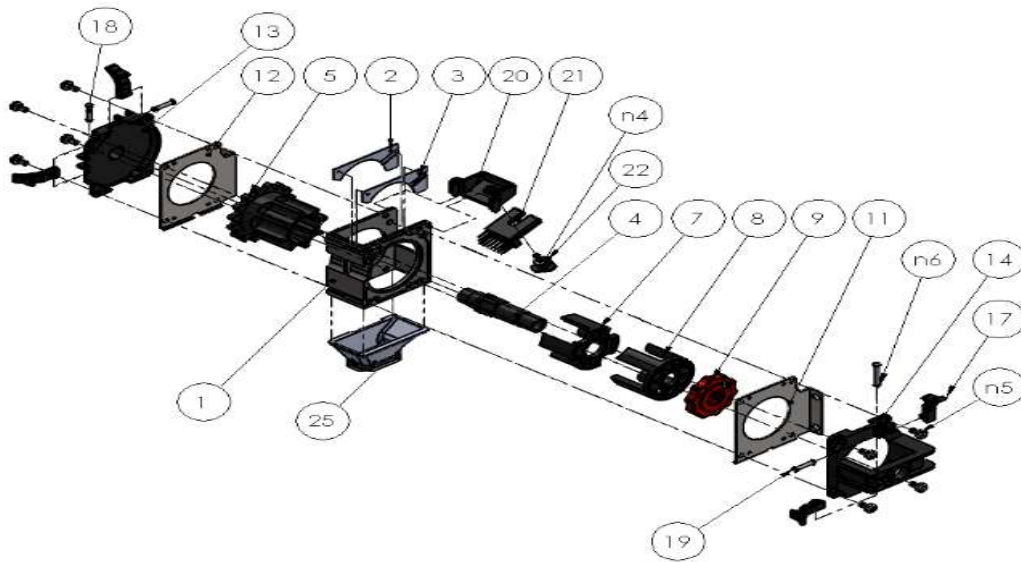
12. Parts List

1. Hopper Assembly



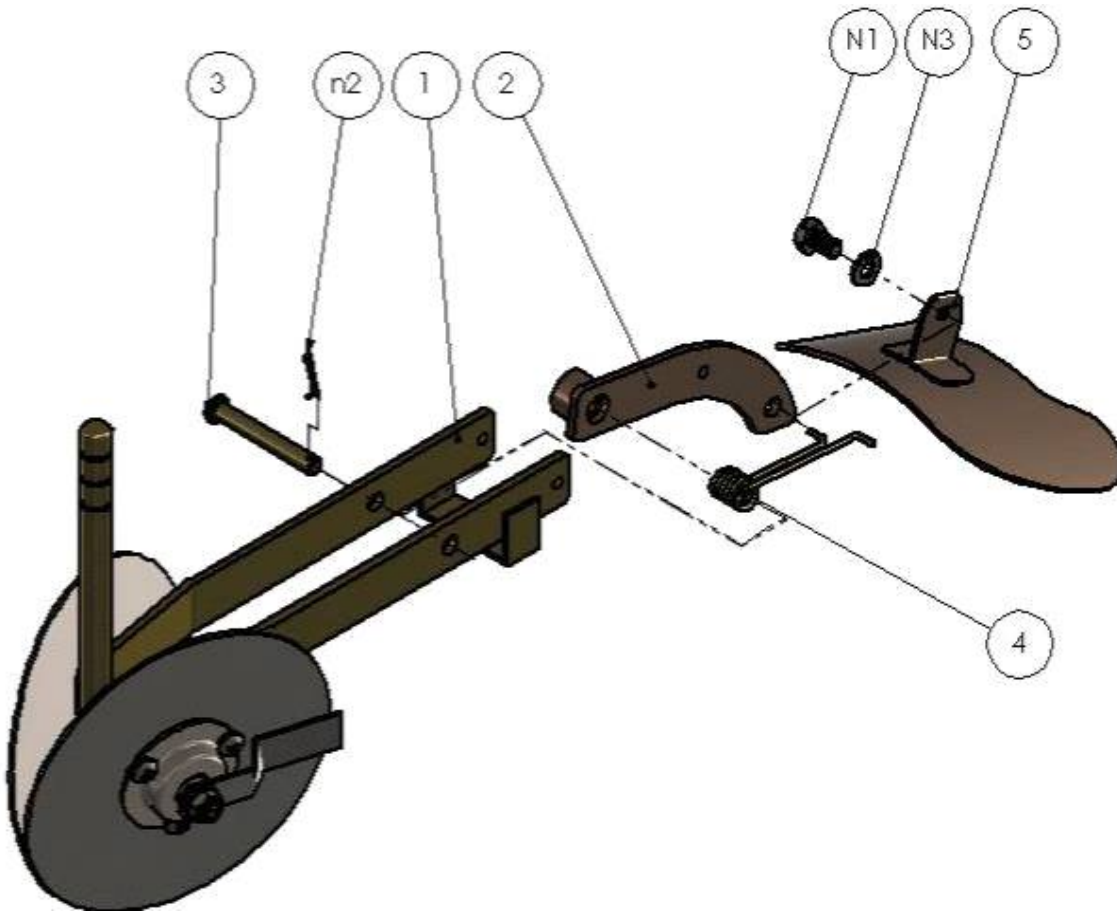
NO	Drawing No.	Description of Goods	Q'ty(pc)
1	JDEV1-0101	Seeds Hopper	1
2	JDEV1-0102	Seeds Hopper Lid	1
3	JDEV1-0103	Hopper Connection Holder	4
4	JDEV1-0101	Connection Link	4
5	JDEV1-0101	Shutter	1

2. Feeding Parts



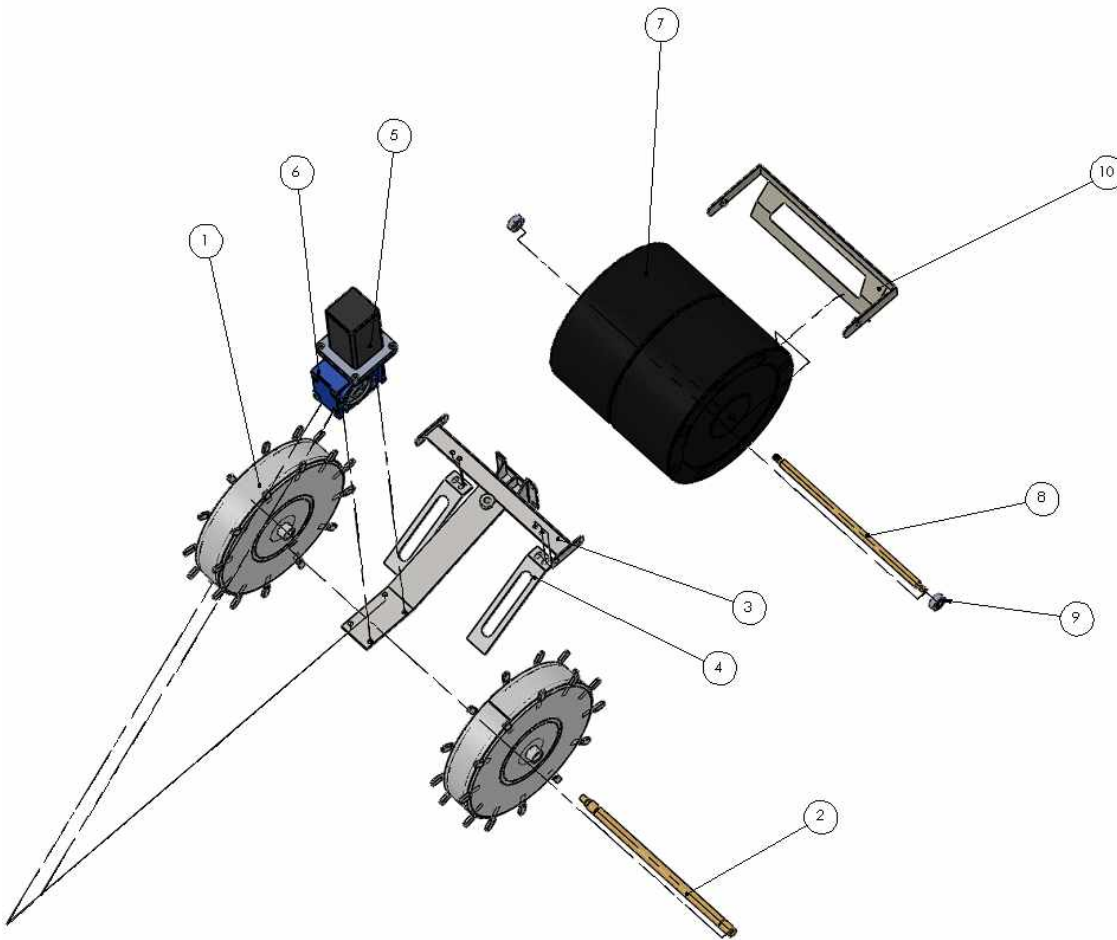
NO	Drawing No.	Description of Goods	Q'ty(pc)
1	JDEV1-0201	Roller Body	2
2	JDEV1-0202	Feeding unit inner guide (left)	2
3	JDEV1-0203	Feeding section inner guide (right)	2
4	JDEV1-0204	Roller body axis	2
5	JDEV1-0205	Roller body	2
6	JDEV1-0206	Feeding unit compression spring	2
7	JDEV1-0207	Roller guide (A)	2
8	JDEV1-0208	Roller guide (B)	2
9	JDEV1-0209	roller shaft handle	2
10	JDEV1-0210	Roller shaft handle name plate	2
11	JDEV1-0211	Feeder fixing bracket A (left)	1
12	JDEV1-0212	Feeder fixing bracket A (right)	1
13	JDEV1-0213	Side cover (A)	2
14	JDEV1-0214	Feeder fixing bracket B (left)	1
15	JDEV1-0215	Feeder fixing bracket B (right)	1
16	JDEV1-0216	Side cover (B)	2
17	JDEV1-0217	Link	6
18	JDEV1-0218	Feeder connection pin (large)	2
19	JDEV1-0219	Feeder connection pin (small)	6
20	JDEV1-0220	Brush holder	2
21	JDEV1-0221	Brush	2
22	JDEV1-0222	Handle	2

3. Plow Assembly



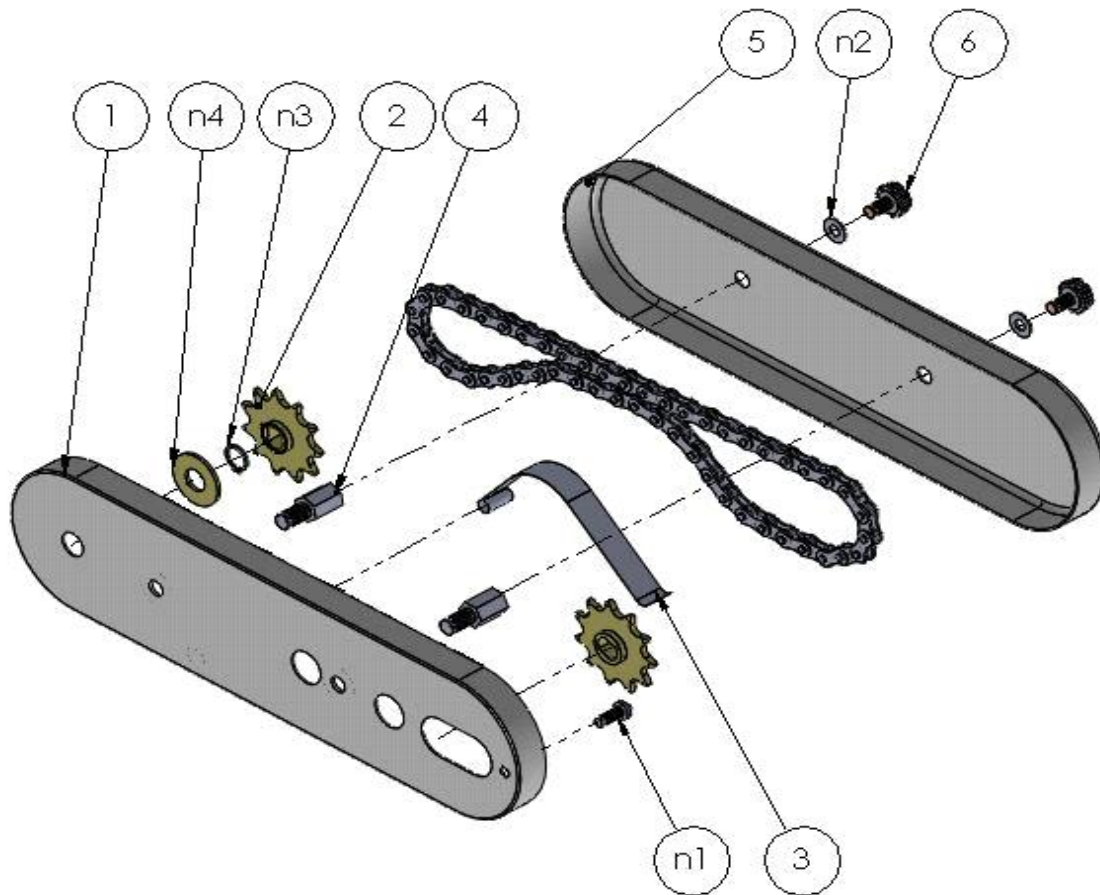
NO	Drawing No.	Description of Goods	Q'ty(pc)
1	JDEV1-0301	Disc plow (for JD-1)	1
2	JDEV1-0302	Plow lever	1
3	JDEV1-0303	Plow pin	1
4	JDEV1-0304	Torsion spring	1
5	JDEV1-0305	Soil Covering Plate (120mm)	1
N1	JDEV1-0306	Hex bolt	1
N2	JDEV1-0307	Split pin	1
N3	JDEV1-0308	Spring washer	1

4. Driving & Suppressing Roller



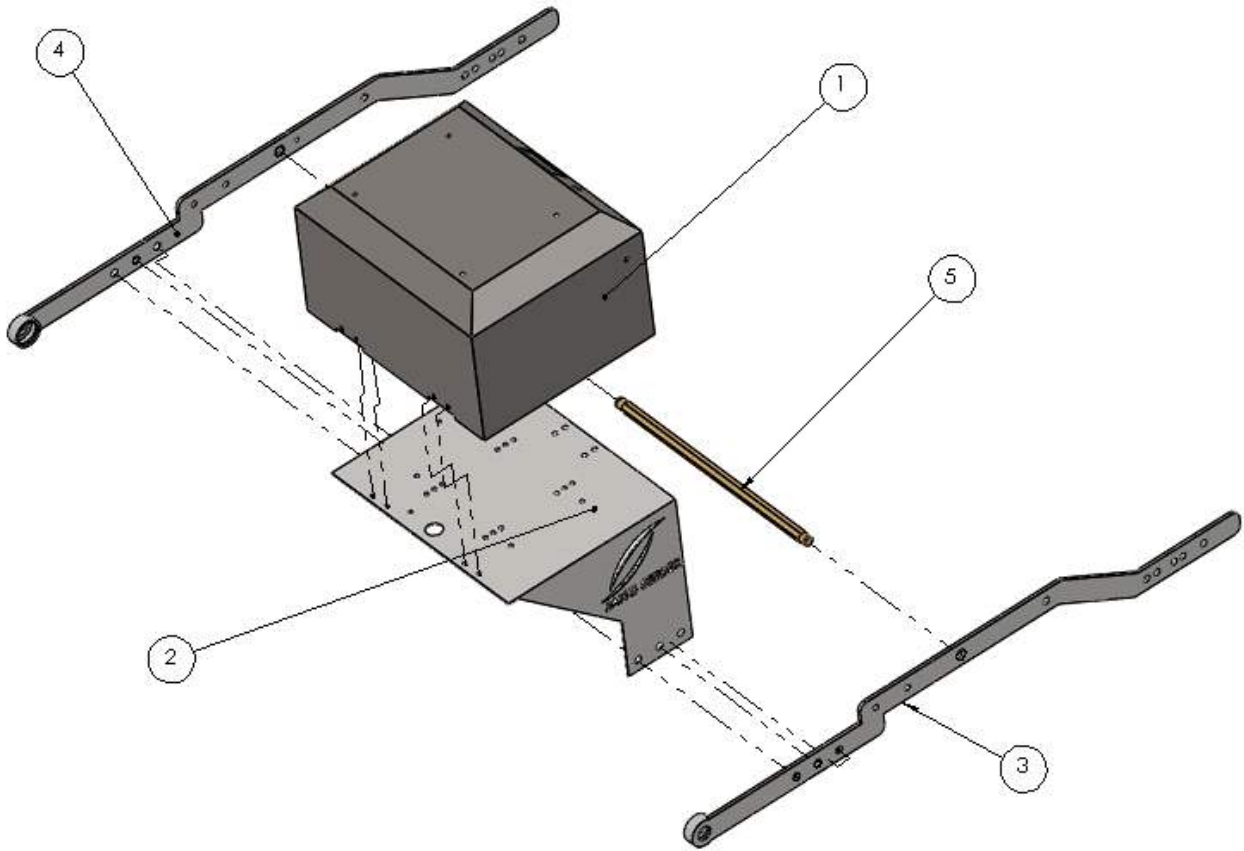
NO	Drawing No.	Description of Goods	Q'ty(pc)
1	JDEV1-0401	Driving Roller	2
2	JDEV1-0402	Driving Roller Axis	1
3	JDEV1-0403	Inter row Marker	1
4	JDEV1-0404	Driving Roller Scraper	2
5	JDEV1-0405	Motor	1
6	JDEV1-0405	Reducer	1
7	JDEV1-0406	Suppressing Roller	1
8	JDEV1-0407	Suppressing Roller Axis	1
9	JDEV1-0408	Suppressing Roller Fixed Bushing	2
10	JDEV1-0409	Suppressing Roller Scrapper	1

5. Chain Case Assembly



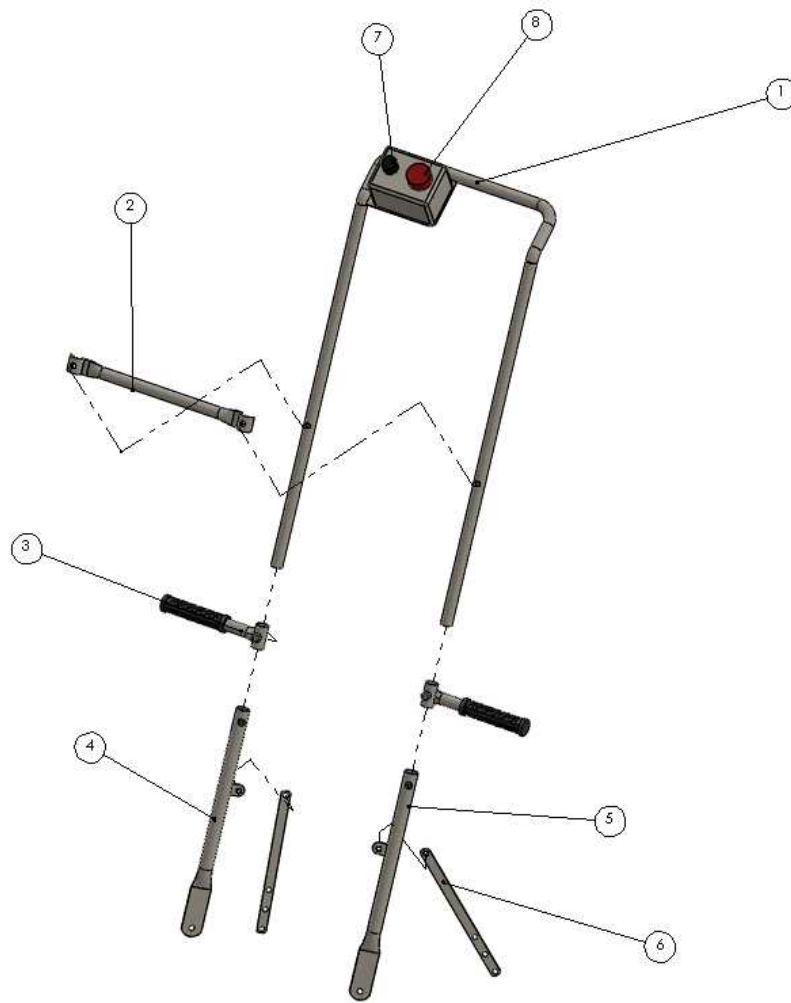
NO	Drawing No.	Description of Goods	Q'ty(Pc)	Remark
1	JDEV1-0501	Chain case (Inside)	1	
2	JDEV1-0502	Sprocket 11T	2	
3	JDEV1-0503	Chain Tension Leaf Spring	1	
4	JDEV1-0504	Chain Case Fixed Axis	2	
5	JDEV1-0505	Chain Case (Outside)	1	
6	JDEV1-0506	Knob	2	
7	JDEV1-0507	Type Name Plate	1	
8	JDEV1-0508	Seeding Spacing standard label	1	
n1	JDEV1-0509	Round Head Cross Bolt	1	
n2	JDEV1-0510	Flat Washer	2	
n3	JDEV1-0511	Snap Ring for Shaft	1	
n4	JDEV1-0512	Flat washer	1	

6. Frame Assembly



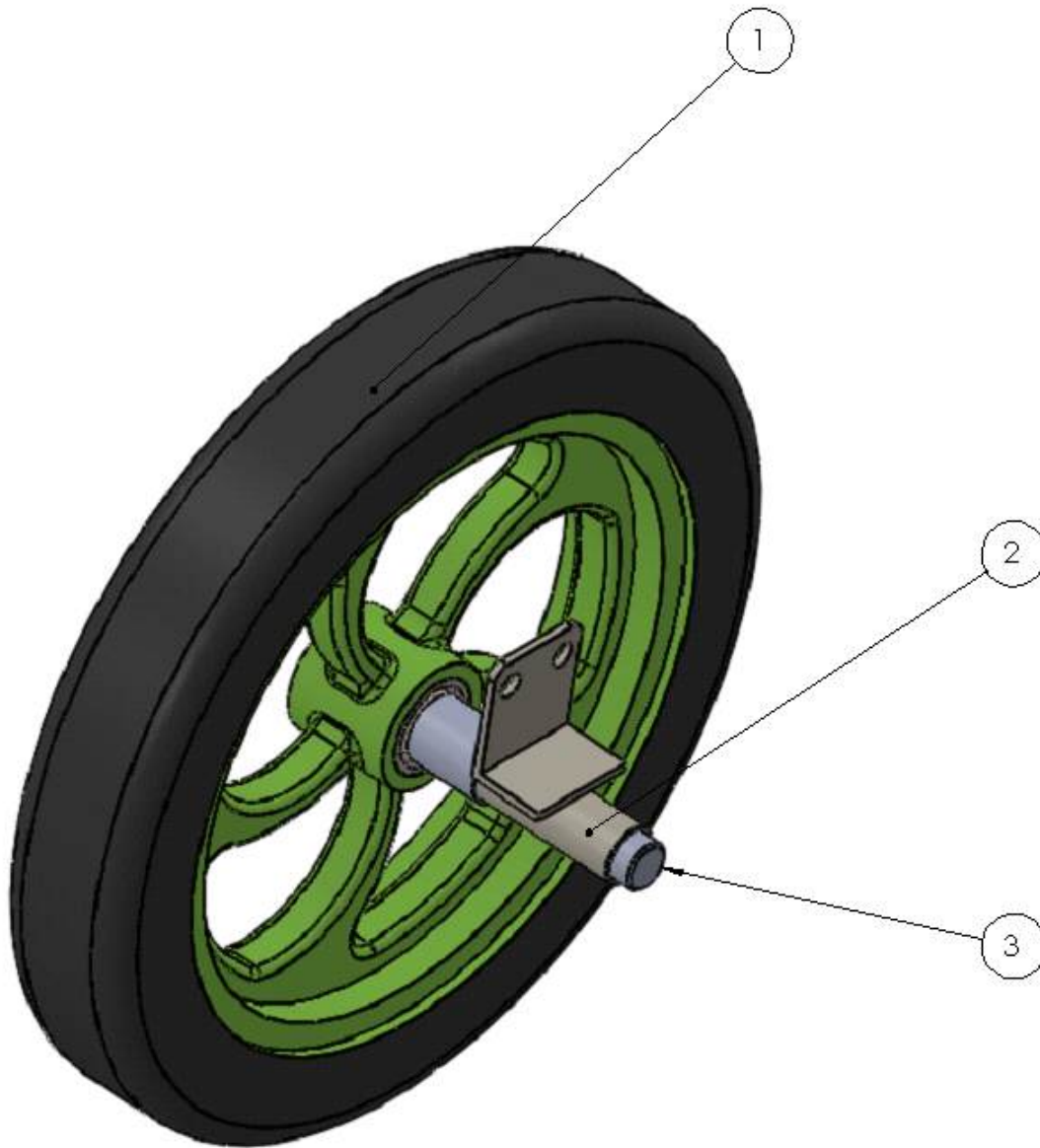
NO	Drawing No.	Description of Goods	Q'ty(pc)
1	JDEV1-0601	Battery Panel Case	1
2	JDEV1-0602	Battery Panel Fixture	1
3	JDEV1-0603	Mainside Frame (Left)	2
4	JDEV1-0604	Mainside Frame (Right)	1
5	JDEV1-0605	Hex Roller Axis	1

7. Handle Assembly



NO	Drawing No.	Description of Goods	Q'ty(pc)
1	JDEV1-0701	Handle C	1
2	JDEV1-0702	Handle C Reinforcement	1
3	JDEV1-0703	Side Handle	2
4	JDEV1-0704	Handle B Right	2
5	JDEV1-0705	Handle B Left	2
6	JDEV1-0706	Handle B Support	1
7	JDEV1-0707	Speed Regulator	1
8	JDEV1-0708	Emergency Button	1

8. Transfer Device



NO	Drawing No.	Description of Goods	Q'ty(pc)
1	JDEV1-08-001	Transport Wheels	2
2	JDEV1-08-002	Transport Wheels Bracket	2
3	JDEV1-08-003	Transport Wheels Bracket Shaft	2