

PREFACE

Our firm manufactures the Direct Seed Drill as a branch of its wide product range under its own roof. It has been proven by farm tests and performance tests conducted in test centers that the Direct Seed Drill manufactured by our firm provides suitable driving technique and display good performance. If, settings of the machine are done completely and in accordance with the operating manual, our machine displays maximum performance and you achieve labor, time and fuel savings.

Ease of use has been proven for several times through tests of the agricultural faculty and trials by you, our esteemed farmers and our machine has received appreciation of our farmers.

Now, this booklet we prepared for you, our esteemed customers includes information on operating and maintenance specifications of the Direct Seed Drill.

ÖZDUMAN TARIM MAKINALARI A. Ş.

Our firm which was established by İban DUMAN has begun manufacturing in 1976 and moved to its current place in the 1st Organized Industrial Zone in 1982. Since the first day of its foundation, our firm has been a leading institution for Turkish farmers.

The parts and assemblies of all tillage and planting machines manufactured by our firm are done by our experienced personnel.

Our firm presents our products through cutting-edge technological products such as CNC turning lathes, computer-controlled vertical machining centers, Robotic Welding System and CNC laser lathes and achieves the world-standards through our Dyeing unit reaching up to 160 degrees of temperature we use at the final preparation phase, experienced computer-supported design

department, experienced engineers and technical office personnel working organized and in harmony. Our firm has established itself in the domestic and foreign markets.

Our firm brings together the machines it manufactures to Turkish and the world farmers through its wide marketing network and dealers in Turkey, domestic and foreign expositions organized in the field of agricultural machinery and foreign trade companies.

Our firm which revises its product-range in accordance with the demands from domestic and foreign markets has achieved the success expected from it in high-quality and reliability through its innovations, designs and permanently innovative perspective in R&D activities and continues to add another chain to its chain of success by every passing day. Our machines have always been appreciated by Turkish and the world farmers. Our firm has successfully completed the activities for ISO 9001-2000 QUALITY MANAGEMENT SYSTEM CERTIFICATION and the CE MARKING which has become a legal obligation for the transition process to the European Union and also proven its high-quality on paper.

Our firm aiming that Turkish farmers and agriculture works with the equipments manufactured at world standards through latest technologies, significantly supports development of Turkish agriculture.

1.0. INTRODUCTION

This booklet contains the operating and maintenance details and the rules to consider related with ÖZDUMAN DEM model Direct Seed Drill.

This booklet is also an integral part of the machine and it is a reference which you can consult for a safe and efficient operation and get the information you need throughout the whole term of use. Therefore, this booklet should always be maintained in a safe place.



This warning sign is used for emphasizing safety messages.

When, you see this sign, please read and implement the related safety message in order to prevent serious injuries.

The operator and customer should read and implement the rules for safety and protecting from potential accidents for their own safety. Therefore, under all circumstances, this machine should be operated by expert people with sufficient knowledge and experience who read the technical details and precautions against accidents completely and carefully.

It should be noted that, the operator is responsible for following and controlling that the machine is used in the conditions best for the health and safety of people and environment.

1.1 GUARANTEE

Check your machine at delivery. If, there is any missing/omitted issues in transport and delivery, you must notify our Technical Service Department within 7 (seven) days upon delivery.

The manufacturer firm cannot be held liable for any problem which might arise due to negligence of the operator or inadequate attention attached to the rules indicated in this booklet.

The manufacturer firm is always ready for providing fast and careful technical support for the machine to run optimally and for you to get maximum performance from it.

Guarantee is limited with replacement or repair of the parts. Customer should always check all functions of the machine before starting any planting process. Dealers, operators or owners of the machine are liable to fulfill and follow all warnings and instructions in this booklet. No indemnity can be demanded from the manufacturer firm for any product or yield loss or loss of life.

Please, contact you Authorized Technical Service point if you experience any problem with your machine.

LIFE CYCLE:

The normal economic life of the machine is 10 years.

1.1.1 GUARANTEE PERIOD

The guarantee term of our machine is 2 years.

Other than the issues agreed during supply phase,

1. The machine is under guarantee for manufacturing and assembly faults for two (2) years.
2. Any and all kinds of problems which might arise during the guarantee term should be notified to our firm on immediate basis.
3. If, the operator intervenes to any problem or damage other than maintenance and repairs done by him/her, the rights of guarantee become null and void.
4. If, the product fails due to manufacturing and assembly defects during the guarantee term, it will be repaired without requesting any fee for workmanship, replacement part or under any name.
5. The product is guaranteed against manufacturing and assembly defects for a term of two years other than the conditions and circumstances below:
 - a.) If, a failure is not immediately notified to an authorized service point when it arises.
 - b.) If, the customer does not give time to an authorized service point for the required intervention and repair.

- c.) If, the repair is not performed by an authorized service point.
- d.) If, a fault or damage is caused by any maintenance and operating errors.
- e.) If, no original replacement part is used.
- f.) If, there is any operator error.
- g.) If, it is caused by worn and broken tires.
- h.) If any fault and/or damage is caused because the machine is not used in an appropriate environment.
- i.) If, periodical maintenances of the machine is not done.
- j.) If, any fault and/or damage is caused because the machine is not maintained in time.
- k.) All kinds of paint wear and tear.
- l.) If, any fault and/or damage is caused while handling it.
- m.) The losses related with stoppage and all other losses notified to be caused directly or indirectly by a fault are out of the scope of guarantee.
- n.) Breakages and abrasion of the disks caused by extraordinary use (such as rocky farmlands, improper or no maintenance and etc.)
- 6. Guarantee is not insurance.
- 7. The customer is completely responsible for transporting and transportation costs a product fails within its guarantee term to an authorized service point or our Factory.
- 8. If, the machine is not used in accordance with the methods and under conditions given in the Operating Manual, it is out of the scope of guarantee.

1.2 DESCRIPTION OF THE SOWING MACHINE

The Direct Seed Drill transfers the seeds and plants them in a farmland by distributing them. The direct seed drill is manufactured as towed-type and it is an agricultural machine driven through the tractor drawbar.

The machine functionally consists of 5 main parts.

- A- The towing-pin group
- B- The Storage and Drive group

- C- Guiding group
- D- Sowing disk group
- E- Hydraulic pressure group

Direct seed drill;

- 1- The direct seed drill is a sowing machine that is used in unprocessed and semi-processed soil types
- 2- which transfers seeds to the seed beds continuously opened by disks
- 3- in accordance with the determined sowing norm at the requested quantity
- 4- and depth in the groove and covering it as required and then
- 5- compacts the soil cover appropriately.

Operating principle of the direct seed drill; the seeds and fertilizer put inside the seed and fertilizer cases are filled in the seed and fertilizer hoppers thanks to their specific shape. By means of the helix pulleys, the seeds and fertilizer filled in the seed and fertilizer hoppers are transferred to the seed and fertilizer piping without any interruption.

Seeds and fertilizer are transferred to the groove in soil opened by planting and grooving beam group with a digging rate set by means of the hydraulic pressure group of the direct seed drill. The seeds transferred on a groove are covered and planting is completed thanks to the covering wheel behind the planting and grooving beams.

In order to perform a planting at an established standard, particular characteristics are required for the regional and farm conditions with regards to farming technique and management.

- a. The rows dug in soil should be at equal distance to each other;
- b. Amount of seeds spread to each row should be equal;
- c. Amount of seeds spread by planters should not be changed during planting operation;
- d. Seeds should be distributed properly on a row and this should be in accordance with the planting norm;

- e. Seeds should be planted to the requested depth;
- f. There should not be any mechanical damage on seeds while planting them;
- g. It should be able to set the machine for various planting norms and depths;
- h. Seeds and fertilizer in cases/hoppers should be easily discharged and cleaned after planting and fertilization;
- i. Operation and maintenance of the machine should be easy.

Direct seed drill must only be used for planting seeds in farmlands. Any operation other than the ones instructed in this booklet can cause serious hazards for the operator as well as potential damage for the machine.

Problem-free operation of the machine is based on its proper use and conducting its periodical maintenances. All issues which might prevent problem-free operation of the machine should be taken into consideration. Therefore, all instructions and rules given in the booklet should be followed carefully.

The manufacturer firm is always ready for providing fast and careful technical support for the machine to run optimally and for you to get maximum performance from it. Please, contact your **Authorized Technical Service** point if you experience any problem with your machine.



The manufacturer firm cannot be held liable for any problem which might arise due to negligence of the operator or inadequate attention attached to the rules indicated in this booklet.


1.3 TECHNICAL SPECIFICATIONS

Properties	Planting Row Space	Unit	DEM 16	DEM 18	DEM 20	DEM 22	DEM 24
Number of Tines	14 cm	Quantity	16	18	20	22	24
Total Length		cm	520				
Total Width (in Road Mode)		cm	345	354	381	409	438
Total Height		cm	197				
Groove Width		cm	284	313	342	367	398
Working width (Constructive)		cm	224	252	280	308	336
Seed Container Vol.		l	390	435	480	525	570
Fertilizer Container Vol.		l	280	314	345	380	412
Beam Disk Size		mm	460 x 6				
Wheel Size		inch	11,5/80 - 15,3				
Weight		Kg	2720	2820	2920	3020	3120
Min. HP		HP	70 - 80	80 - 90	90 - 100	100 - 110	110 - 120

(*) Weight of the machine while the containers/hoppers are empty.

NOTE: The values given in the table above are not binding. The manufacturer reserves its right to make any changes on these values and model.

1.4 DESCRIPTION OF THE MACHINE

Özduman (1) Özduman Tarım Makinaları Sanayi ve Ticaret A.Ş.	(6) DEM
MODEL (2)	 1. Org. San. Böl. Bayrampaşa Cad. Güvençli Sk. No:7 Selçuklu/KONYA Tel: +90 332 248 23 57-58 Faks: +90 332 251 63 92 www.ozduman.com info@ozduman.com
ÜRETİM YILI (3)	
SERİ NO (4)	
TİP (5)	

Every machine has an identification card.

1. Name, title and address of the manufacturer firm,
2. Model,
3. Year of Production,
4. Serial No,
5. Machine type,
6. Class,
7. CE Marking (the European Quality Standards Marking)

This information should be notified to us while requesting technical support or a replacement part.

1.5 HANDLING

If, it is necessary to handle the direct seed drill, towing-pin of the direct seed drill should be fixed to the tractor drawbar. After, the connections which should be established carefully are done, handling should be done by a carrier with sufficient capacity.

The manufacturer firm cannot be held liable for any problem which might arise due to negligence of the operator or inadequate attention attached to the rules indicated in this booklet.

Handling and transport should be done by people authorized and experienced in that as it might cause accidents if the machine is not handled properly.

1.6 WARNING SIGN LABELS

Here, the labels used on the machine are seen in the figure. Ensure that these labels on the machine are not damaged. Replace the unreadable and worn labels with new ones. Master the definitions of these signs and labels.

1.6.1. WARNING SIGNS

1. Please, read all instructions in the booklet before starting your machine.

2. Please, stop the machine and refer the information provided in the booklet before starting any maintenance.



1.6.2. HAZARD LABELS

3. Please, keep your safety distance at the first start up phase against any jamming risk.



4. Please, keep your distance against the risk of getting caught by moving parts.



5. Never touch rotating parts. Cutting risk.



6. It is strictly forbidden to climb over the machine, falling risk.



7. Use the required personal protective equipment against high noise level.

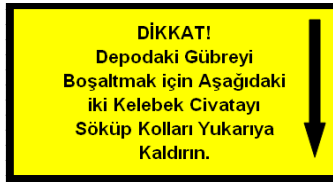


1.6.3. INDICATOR LABELS

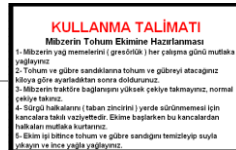
8. Label indicating daily lubrication spots.



9. The instruction for discharging the seeds and fertilizer in the cases/hoppers



10. Label indicating the operating instructions on the machine.



11. The label indicating the points to be greased.



2.0. SAFETY INSTRUCTIONS AND ACCIDENT PRECAUTIONS

Please, pay attention to the signs in the booklet indicated by a hazard symbol.



There are three risk levels.

HAZARD: This sign indicates that if the indicated procedures are not followed and implemented properly, this will cause serious injury, death and long-term health risks.

ATTENTION: This sign indicates that if the indicated procedures are not followed and implemented properly, this might cause serious injury, death and long-term health risks.

WARNING: This sign indicates that if the indicated procedures are not followed and implemented properly, this might cause serious damages on the machine.

In order to define different risk levels, the following cases and special definitions can directly cover people and the machine.

RISK ZONE: This indicates the space which will pose a risk for health of the person if there is any one around the machine.

UNPROTECTED PERSON: This means a person who is completely or partially inside of a risk zone.

OPERATOR: These are the people responsible for installation, operation, setting, maintaining, cleaning, repairing and transferring the machine.

USER: The user is a person, organization or a firm which purchases or leases the machine for its designed purpose.

QUALIFIED PERSONNEL: These are the persons who are specialized in maintenance and repair processes, safety warnings and intervention methods of the machine.

AUTHORIZED SERVICE CENTER: Authorized service center is a structure which is authorized by the manufacturer and contains the personnel specialized in support, maintenance and repair of the machine.

Please, read all instructions carefully before using the machine, if you hesitate in anyway, please contact an authorized dealer or our factory. As the manufacturer firm, we do not assume any responsibility for any accident or result which are caused when you do not follow safety and accident precautions and rules.

General Rules;

1. You should pay great attention to the hazard signs in this booklet and on the machine.
2. The labels stuck on the machine indicated in the directives are recommendations for preventing accidents.
3. The rules of safety and protection from accidents should be considered carefully through the directives.
4. Please, avoid from touching running parts by any means.
5. The engine should be down and the tractor should be stationary in order to conduct any process or setting on the machine.
6. People, animal and belongings should never be carried on the direct seed drill.
7. While, the equipment is connected to the tractor, it is strictly forbidden that it is driven and operated by any unhealthy person without any driving license and experience.

8. Before, starting the tractor and the equipment, please check that all carriage and operation mechanisms and instruments are in their dedicated places.

9. Before, starting the equipment, please make sure that there is not any animal, especially any child around the machine and you have full and open view point.

10. Please, wear clothes appropriate for the work you do. Avoid wearing loose clothes or clothes with parts to be caught and entangled in the tractor and moving parts of the machine.

11. Before starting an operation, please make sure that you know how to control all control devices and their functionalities.

12. Please make sure that all housings are in their dedicated places, durable and safe.

13. Never stand in the operation field of the machine where its moving parts work.

14. It is strictly forbidden to use equipments without case covers and housings.

15. Before, leaving the tractor unattended, please visually check the machine's perimeter. Set the parking brake, remove the switch from ignition switch and keep it away from chemicals.

16. The driver's seat should never be left unattended while the tractor is running.

17. Before, starting the equipment, make sure that the abutments are lifted from the bottom of the machine, all parts of the equipment are placed properly and all mechanisms are in their proper positions and running smoothly.

18. Always work under conditions where you have good view point.

19. All processes should always be carried out by the personnel with sufficient qualification to operate the machine. The machine should be run in a protected, clean and dust-free environment.

20. While, connecting to the tractor, note that there is always a risk of damage and congestion and be careful.

21. Never exceed the permitted levels of handling dimensions, weights and axle loads.

22. Always drive the tractor more carefully and slowly by considering that handling and brake control can be negatively influenced while the weights and the machine are connected to the tractor.

23. Never put your hand inside the seed and fertilizer cases while the machine is running.

24. Never put your hand or anything inside the openings of gear housings while the machine is running.

25. Maximum speed limit while the machine is connected to the tractor should be **20 km / h..**

26. Long distance transport operations should be carried out through an appropriate carriage. You should not enter any interstate highway while the machine is connected to the tractor.

27. Keep your operating and maintenance booklet, until your machine wears out.

28. Always supply the replacement parts of your machine from its manufacturer or authorized dealers, always use original replacement parts.

29. This operating and maintenance manual is prepared for preventing accidents. You must follow all instructions and directives in this guide.

The Rules for Connecting the Machine to Your Tractor;

30. You must stop the machine and the tractor while connecting each other. Set the hand brake.

31. While, connecting and disconnecting the machine to the tractor, always switch the hydraulic lever to the appropriate position, the levers might accidentally raise or descent.

32. There is risk of congestion and crushing while connecting the machine through the towing-pin mechanism.

33. Pay attention that the machine is connected to the tractor through the exact center.

34. Make sure that both ends of the chassis are at the same distance and parallel to the ground. Otherwise, planting will not be proper as the disks will be at different positions.

35. Lift the support leg of the machine and fix it to the pin holes.
36. While, the machine is connected to the tractor and you are about to hit the road, always lock the control system of the hydraulic linkage levers.
37. Tractor axles change the load distribution of the direct seed drills connected through three point linkage. Please, check if the load applied by the direct seed drill on the 3-point linkage system is in accordance with the load capacity of your tractor. It is recommended to add additional weights on the front part of your tractor to stabilize the load on axles. If, you hesitate on that, consult the manufacturer firm of your tractor.

The Rules for Carrying on Road:

38. Follow your local traffic rules while carrying the machine in public roads.
39. All transport accessories should have appropriate signs and housings in the road mode.
40. Note that the tractor might lose balance and get out of control due to centrifugal force at turns caused by the machine's width and additional loads.
41. You should consider potholes and bends of roads. You should pay utmost attention to the deviations in center of gravity which might be caused by the centrifugal force. You should show same attention on the rough roads and grounds with or without the equipment.

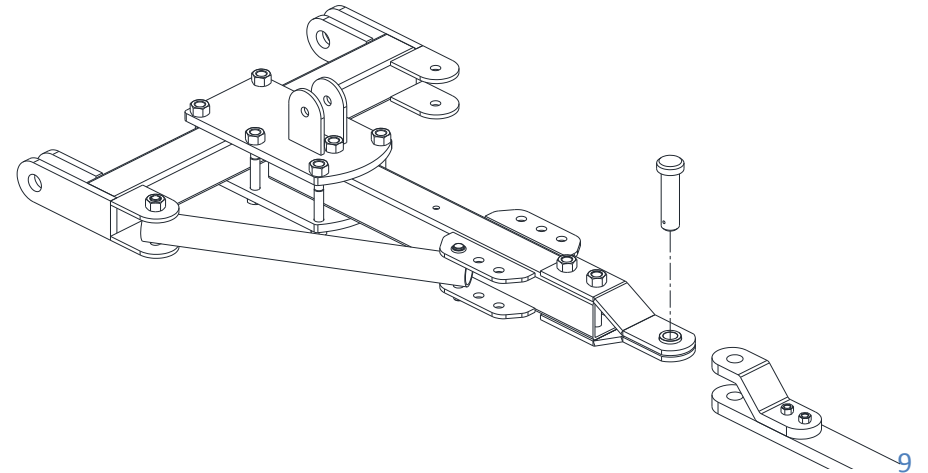
43. All cases/containers/hopper must be empty in the road mode.

3.0. OPERATING INSTRUCTIONS

Please, follow the following directives well in order to obtain the best performance from your equipment.



All maintenance, setting and planting operations must be done while the power take-off of the tractor is deactivated, the direct seed drill must be on its support legs, the machine must be connected to the towing-pin or if it is a towed-type direct seed drill to a three-point linkage system, the tractor must be stopped, the wheels must be blocked and the ignition switch must be turned off.



3.1 CONNECTING THE MACHINE TO A TRACTOR

The direct seed drill is connected to a tractor through its towing-pin mechanism or if it is a sowing machine with a three-point linkage system through hydraulic levers of the tractor.

HAZARD: Connecting the machine to a tractor is a very dangerous phase. In order to achieve this phase without any problems, you must pay utmost attention to all the following issues and make sure that there is not anyone near the machine.

3.1.1. MAKING THE CONNECTIONS

Pay attention to the parallel position of the connected direct seed drill to the ground.

ATTENTION: Always follow the steps determined by the manufacturer for transporting the direct seed drill.

3.1.2. STARTING THE MACHINE

The direct seed drill is delivered ready-to-run.

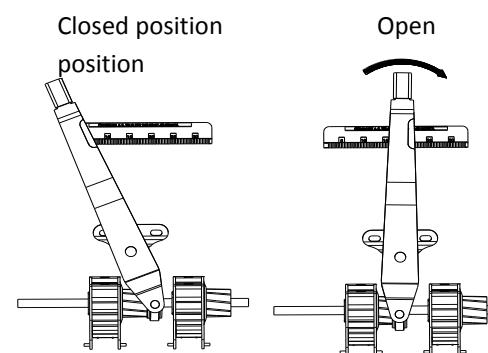
Start the machine after carefully checking the operating instructions on the machine.

1. Always lubricate the grease nipples of the direct seed drill in every day of operation.
2. Fill in the seeds and the fertilizer into seed and fertilizer cases/hoppers after setting their weight.
3. Connect the direct seed drill to the tractor through normal towing-pin rather than the higher one. Otherwise, it spreads more seeds than required.

4. When the sowing process is over, clean the seed and fertilizer cases with water and lubricate by thin oil.

3.2 SEED AND FERTILIZER SETTINGS

3.2.1. SEED AND FERTILIZER GRADE SETTING LEVER



You can set the amount of seed you will plant in accordance with the following table by means of the Seed and Fertilizer Setting Lever.

EXAMPLE 1: In order to spread 26 kg wheat in 1000 meters in 14 rows through 7.50x16 rubber tire direct seed drill, you should set the setting lever to the 22nd grade.

3.2.2. SEED TABLES

DIRECT SEED DRILL SEED AND FERTILIZER NORM																						
GEAR	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44
WHEAT	2	5	7	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	41	42	43	44
BARLEY	2	5	7,5	9	10,5	13,5	15	18	20	22	24	26	27,5	29,5	31,5	33,5	35	38	40	42	43	44
OAT	0,5	1,5	4,5	6	7	8	10	11,5	13	14,5	16	18	20	21,5	23	24,5	26,5	28,5	30	32	33	34
LENTIL	1	3,5	10	12	14	16,5	19	22	24	26	28,5	31	33,5	36,5	39	42	44,5	47,5	50	53	54	55
VETCH	1	2	9,5	11,5	14	16,5	19,5	22,5	25	27,5	30	33	36	39	42,5	46	49	52,5	55	59	60	61
SAFFLOWER/CANOLA	0,5	2	7	8,5	9,5	11,5	13,5	15,5	17	18,5	20,5	22,5	24,5	26,5	28,5	30,5	33	35	37	39,5	41	42
WICKER	1	2,5	9	11	13	15,5	18	20,5	22,5	25	27,5	30,5	33	35,5	38,5	41	43,5	46,5	49	52	53	54
DAP FERTILIZER	2,5	7,5	9,5	12	14,5	17,5	20,5	23,5	26,5	30	33	37,5	41	43	46,5	49,5	52	53,5	55			
CHICKPEA			1	3,5	5,5	7,5	9	11,5	13,5	15	16,5	18	19,5	21	23,5	26,5	29,5	32,5	35,5	38,5	41,5	42,5
BEANS			0,8	3	4	4,5	5,5	7	8	9	10	11	12	13	14	15,5	16,5	18	19,5	21	22,5	24

Sowing Beans: If, it is sowed with 42 cm distance, in other words, if a row is opened and two are closed, it spreads beans as shown in the table above. Number of seeds spread increases as seeds become thinner. Decreases as they become larger.

Sowing Chickpea: If, it is sowed with 28 cm distance, in other words, if a row is opened and a row is closed, it spreads chickpeas as shown in the table above. Number of seeds spread increases as seeds become thinner. Decreases as they become larger.

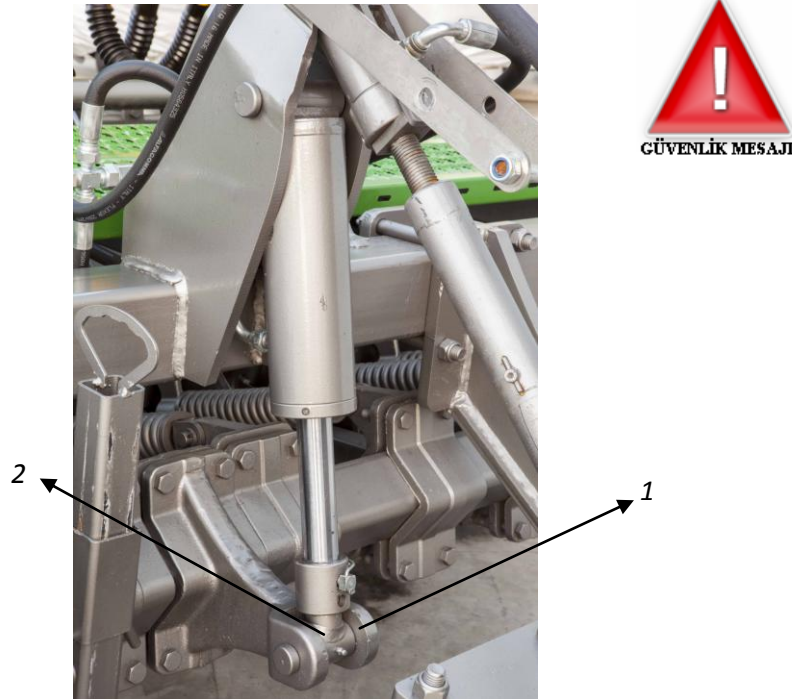
Wheel Rotation Rate for the Direct Seed Drill with 14 cm Row Distance (1000 m ²)			
DIRECT SEED DRILL Number of Tines	7. 50 x 16 Standard Wheel	11. 50 x 80 x 15. 3 Special Wheel	12. 4 x 24 Huge Wheel
12	246	234	-
14	211	201	-
16	184	176	-
18	164	156	113
20	148	141	105
22	134	128	93
24	123	117	85
28	105	100	73
32	92	-	51
40	74	-	-

4.0. REQUIRED SETTINGS OF THE MACHINE

Direct Seed Drill is set and presented ready for sowing. Some settings might be necessary in addition to setting the seed and fertilizer amounts. The settings to be done by the operator are given below.

4.1. DISK PENETRATION SETTING

This setting is used for increasing the penetration rate of your disk, if it does not penetrate as required. Our disks linked by hydraulic lift are set at the required level as shown below. We can set penetration level of our disks by pulling the penetration pin (1) and attaching it to the holes on the setting pipe (2).



4.2. SPRING PRESSURE INCREASE SETTING

A second setting for increasing pressure on the disks is increasing the pressure on springs where the disks are linked.



The pin on the shaft is used for increasing this pressure.

4.3. SEEDING AND DISCHARGE SETTINGS

Couplings of the split seed drill should be set in the appropriate opening for sowing small seeds (such as wheat, barley and etc.). We can set the

opening by sliding it through the gear for sowing large seeds (such as beans, chickpeas and etc.).

After completing sowing operation, we complete the discharge process when we switch the clamping lever to the lowest point of the gears for easily cleaning the seed maw. Return the lever to its original position after completing the discharge process.

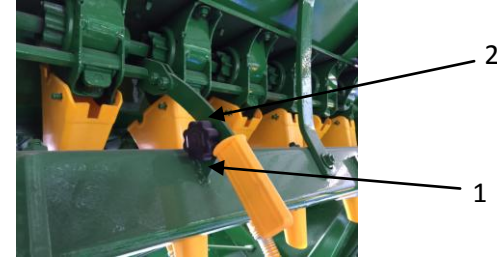


It is ensured that seeds are discharged by working simultaneously through the lever controlling the couplings of the seed and fertilizer maws.

4.4. FERTILIZER DISCHARGE SETTING

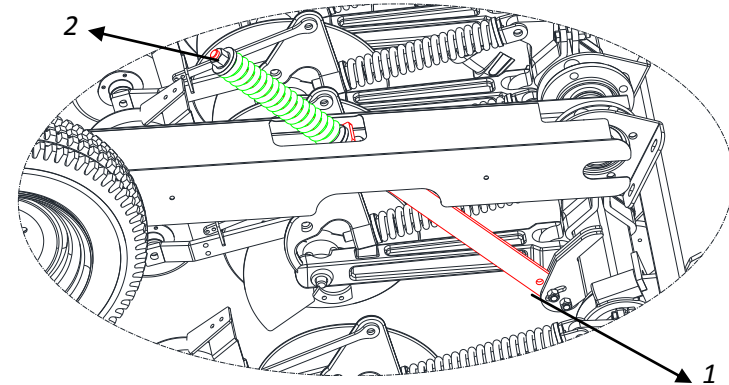
There is a fertilizer discharge lever on the Direct Seed Drill. After completing the sowing process, the remaining fertilizer must be discharged completely, otherwise, there is a risk of gelation for fertilizer containers as fertilizer will be oxidized. This setting is provided in order to prevent this and facilitate the discharge process. The handle (1) is released for discharge process and the fertilizer is discharged by switching on the lever (2). After completing

the process, fix the lever in its original place and then lubricate fertilizer compartments.



4.5. SOWING DISK PENETRATION SETTING

The pressure of the toothed motion wheel, preventing interruption of motion (drift) and ensuring edges of farmlands are sowed, is increased by means of the holes (1) in wheel bar and the bolt (2) on the spring.





5.0. PERIODICAL MAINTENANCE

You should pay special attention to maintenance of your machine for a long service life. Please, consider the warnings before starting maintenance.



- The maintenance periods described in this booklet are only for guidance and applicable for normal operating conditions. Therefore, these periods might vary base on operating conditions (such as dusty and etc.), weather conditions and etc.
- Please, clean the grease nipples before applying grease as dust and foreign matters will mix in with grease and decrease

lubrication quality. This cleaning will improve quality of your lubrication.



- Keep grease and other lubricants away from children.
- Carefully read the descriptions and precautions on lubricant and grease containers and product protection cards.
- Avoid skin contact with such materials.
- Wash the machine with plenty of water after each sowing operation.
- Consider the environmental conditions related with used lubricants and toxic wastes.

5.1. MAINTENANCE OF NEW MACHINES

Check tightness of all bolts after every 8 hours of operation.

5.2. DAILY MAINTENANCE

- Clean the seed and fertilizer cases/hoppers.
- Wash the cases/hoppers with hot water, dry them and then lubricate turning parts by fine oil. **(Do not use diesel.)**
- Check all bolts and nuts, if there is any loose one, tighten.
- Check transmission of motion.
- Lubricate all grease nipples.
- While maintaining the machine, put supporting elements (such as wedge and etc.) under it.

- Use protective gloves while replacing parts with sharp surfaces.

5.3. WEEKLY MAINTENANCE

- Check air pressure of tires.
- Check functionality of springs.
- Repair or replace the faulty parts.
- Check Cones and Pipes. Replace the worn/torn ones.
- Lubricate all grease nipples.

5.4. PARKING THE MACHINE

At the end of season or if you will not use your machine for a long time, we recommend you to follow the following instructions.

- Wash the machine and especially the fertilizer case with plenty of water, then dry it and in the end lubricate with fine oil.
- Thoroughly check whether there is any damaged or torn part of the machine. If, it is necessary, replace with new ones.
- Check tightness of all bolts and nuts.
- Check drive gears and chains and lubricate them with grease.
- Check the chassis discs of the machine. Replace worn/torn ones.
- Cover the machine.
- Finally, store the machine in a dry and cool place.

If, these conditions are provided, your machine will be completely ready for operation in the beginning of a new season.

5.5. ISSUES TO BE CONSIDERED DURING MAINTENANCE, REPAIR AND OPERATION

- All kinds of problems related with the machine other than the maintenances and repairs which can be done by the consumer should be notified to the authorized service point.
- While, performing maintenance and repair of the machine, you should avoid chemical cleaning agents due to potential corrosion.

- The elements which should be tightened should not be tightened at high torque after performing general maintenance and repair of it.
- The machine should not be started if the farmland is very rocky or there are stones/rocks under soil.

6.0. USAGE ERRORS AND TROUBLESHOOTING

1. Problem: One or several seed maws do not spread seeds.

Reason: If, the seeds filled in the seed case are not sieved and if there is any plant residue inside the seeds, they block the seed case.

Troubleshooting: The blocked case should be cleaned and the sieved seeds without any plant residue should be used. Otherwise, plant residues will block all orifices of the case and this will influence the weight of seeds spread to soil.

2nd Problem: One side of the machine spreads a little bit more seeds and fertilizer than the other side.

Reason: If, you always turn the same direction with the machine; **For example:** if, you always turn left at the farm; the right wheel turns more than the left one. As the seed and fertilizer maws at right are driven by the wheel, this causes a little bit more seeds and fertilizer are spread than left.

Troubleshooting: As, the amount of spread seed and fertilizer only increases during turns due to the aforementioned reason and the amount of spread seed and fertilizer is equal while the machine is on a straight route, it is recommended not to change the settings given in the seed and fertilizer table.

3rd Problem: Seed maws do not spread seeds regularly or half of them spreads regularly while other half spreads more seeds.

Reason: The bolt fixing the seed spread grade lever shifted the grade lever by sliding or the bolts fixed to the seed maws linked to the seed case might become loose and the maw might shifted through the spreader gear.

Troubleshooting: When, you get the seed spread grade lever to zero position, the gears of all seed maws should come face-to-face with the gear washer of the seed maw. If, all gears have same protrusions while the maw and the washer are not face-to-face;

- a) Loosen two bolts fixing the seed spread grade lever, while the grade lever is at zero position,
- b) Make the gears come face-to-face with the gear washer at the seed maw by means of a crowbar.
- c) Switch the seed spread grade lever to zero position without moving gears and tighten two bolts you have once loosened.

Follow the aforementioned steps. If, some of seed spreader gears do not come face-to-face with the washer;

- I. Loosen two bolts of the seed spread maws as one from front and one from behind,
- II. Slide the seed spread maw on the case to come face-to-face with the washer by means of a hammer.
- III. Tighten the bolts you have loosen straightly in an aligned way without moving the seed maw.

4th Problem: Seed and Fertilizer spread maws do not turn?

Reason: The spring in toothed gear mechanism is lost.

Troubleshooting: If, the spring is lost, replace it.

5th Problem: The Seed and Fertilizer spread maws stop while moving?

Reason: The hammer sheet on 24" four square which sets grasping the toothed gear might be bent.

Troubleshooting:

- a) Lift the machine's tire by a jack lever,
- b) Switch the machine into sowing mode

- c) While, the machine is set to the minimum penetration level, the toothed gear should be grasped by the steel gear on 32" shaft with 2 mm space.
- d) If, the hammer sheet blocks grasping of the gear by contacting the teeth; remove the hammer sheet, bend it not to prevent grasping the gear and then replace it. (Do not bend the hammer sheet too much, otherwise, the machine do not switch from sowing mode.)

6th Problem: Seed case mechanism and bearing elements of the direct seed drill are oxidized and corroded.

Reason: If, the seed and fertilizer cases of the machine are not cleaned, the container mechanism is not lubricated with fine oil, bearing elements are ungreased, the machine is not stored in an indoor space, the seed case mechanism and bearing elements become oxidized and moving parts become nonfunctional.

Troubleshooting :

- a) Wash the seed and fertilizer cases with hot and pressurized water, clean those to leave no residue and wait until they become completely dry.
- b) Lubricate the gears, gear bearings and gear washer of the seed and fertilizer maws well with fine oil.
- c) Lift the tire by a jack lever.
- d) Lubricate all grease nipples as good amount of grease overflows from sides of the bearings,
- e) Switch the machine into sowing mode. Turn the 16" four-square by means of a wrench and help turning seed maws. Try to turn the wheel by hand without too much force. If, the gears do not still move, heat the gears and bearings of the seed maws and make it easier for them to switch from gelation to motion.
- f) Lubricate the seed case mechanism of the machine and the bearing grease nipple while they are moving. By this way, you provide better motion for the bearings.

7th Problem: Threaded pin of the drive chain breaks. The seed and fertilizer maws do not turn.

Reason: This might be caused by ungreased grease nipples which should be lubricated every day of operation, mechanisms are seized during operation, gelation of fertilizer residues inside the fertilizer case and congestion of a foreign matter.

Troubleshooting: Lubricate all grease nipples and replace the broken pin.

8th Problem: Seed maws turn while the machine is in road mode.

Reason: Connecting bolt of the hammer sheet might be loosen, the hammer sheet might be bent and do not contact the tooth.

Troubleshooting: Tighten the connecting bolt and if the hammer sheet is bent, bend it to contact the tooth.

9th Problem: The automatic control turning the direct seed drill into sowing mode does not trip or trips late.

Reason: The automatic lever might not be pulled well, automatic bearings might be ungreased, the latch inside the automatic gear might be jammed or latch spring might be stretched.

Troubleshooting: Pull the lever well, lubricate the grease nipples well, slowly hit the latch with a hammer to leave the sufficient space. Replace the spring if it is stretched.

10th Problem: One of two lifts of the direct seed drill with lift moves while other does not?

Reason: Lift pipes might be connected improperly, tractor hydraulic system might be unfunctional or has low hydraulic fluid, the valve over the lift might be closed and pipe might be clogged.

Troubleshooting: Check the connections of lift pipes, check the hydraulic fluid of the tractor, check the valve and pipes.

11th Problem: Tire of the direct seed drill is thrown?

Reason: Tensioning might be faulty or its spring might be lost or axle might be bent.

Troubleshooting: Check the tensioning and replace it is necessary, replace the spring if it is lost, if the axle is bent, lift the machine from the axle sheet, check axle clamps, change the axle to make it parallel to the chain gears, axle has cut the fixing bolt, replace that bolt.

12th Problem: Disk does not rotate?

Reason: There are residues on the disk surface, disk scraper contacting to the shovel and preventing rotation.

Troubleshooting: If, the disk scraper does not rotate by contacting the shovel, put a thin crowbar between the disk and the scraper shovel and separate them a little in order not to prevent rotation of the disk.

13th Problem: While, the sowing tines are sowing, the machine hills before the tines.

Reason: The disk does not rotate, the towing-pin of the direct seed drill is connected to the higher towing-pin, clods in the farmland are large, weeds in the farmland are not cleaned.

Troubleshooting: Set penetration at normal level based on the farmland's condition, check rotation of the disks, connect the towing-pin to the normal one and make sure that it is parallel to the ground and clean farmland's surface from weeds.

14th Problem: Fertilizer maws turn while do not spread any fertilizer.

Reason: As the fertilizer is moist, the moist fertilizer might be stuck on the gear surface of the fertilizer maws, fill that surface and

prevent spreading fertilizer. In addition, the moist fertilizer might be blocking the fertilizer openings inside the case.

Troubleshooting: If, the fertilizer is moist, de-aerate it, discharge the fertilizer inside the case and clean the openings through the fertilizer maw, remove the seed cap connected to the maw and clean the fertilizer stuck on the gear surface by means of a screwdriver.

15th Problem: I want to spread more fertilizer than shown in the table on the machine. What should I do?

Reason: You should change the size of the fertilizer drive gear.

Troubleshooting: Apply the authorized service and request the fertilizer gear to be installed on the machine.

16th Problem: I set the fertilizer in accordance with the fertilizer setting table but it spreads more than set amount.

Reason: This setting varies 10% - 20% based on grain size of the fertilizer.

Troubleshooting: Amount of spread fertilizer might increase based on grain size. You should set it through the spread setting table.

7.0. SERVICE AND REPLACEMENT PARTS

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