

FOREWORD

Disc Pneumatic Seed Drill Machine is produced along with many other items within the vast product array of our company as a distinctive device therein. A good deal of performance experiments both in the field and at test centers have proven that the Disc Pneumatic Seed Drill Machine produced through us enables a suitable driving technique and shows outstanding performance. Our esteemed clientele will receive maximum performance from our machine should they perform the mechanical adjustment fully and comply with the instructions cited in the manual which will pave the way for less labor costs as well as time and fuel efficiency.

Ease of usage of our machine has been proven numerous times in the experiments conducted through the Faculty of Agriculture and tests performed by you, our esteemed farmers.

This manual prepared for you, our valuable clientele, includes information vis a vis the use, maintenance and spare part specifications of our Disc Pneumatic Seed Drill Machine.

ÖZDUMAN TARIM MAKİNALARI A.Ş.

Our company, established as ÖZDUMAN TARIM MAKİNALARI A.Ş., has commenced the production activities thereof in 1976 and moved to our current workplace domiciled in Konya/Turkey in 1982. We pride ourselves on being a company spearheading the Turkish Agriculture as from the foundation date thereof.

Parts and demounting of all the soil processing and planting equipments produced by us are made by virtue of the experienced employees of our company.

Our company on one hand provides our esteemed clientele with the state of the art technologies such as CNC lathe bench, computer controlled vertical machining center, robotic welding systems and CNC laser welding bench and on the other hand thanks to our painting unit, reaching some 160⁰ C employed through us at the last preparation stage, and our experienced

computer aided design department has kept up with world standards and made our company a recognized brand within the domestic and foreign markets through working harmoniously and in an organized manner with our experienced engineers and technical office staff.

Machines produced by our company reach Turkish and world farmers through virtue of a vast marketing network and our agencies and due to participations to fairs organized at home and abroad germane to agricultural machinery.

Our company, constantly revising the production procedure thereof in parallel with requests received from markets within and without Turkey, has reached the expected success in terms of quality and reliability thanks to the continuous innovative viewpoint thereof vis a vis innovations, design and R&D Works performed thereby and every passing day our success increases our success increases cumulatively. The machinery produced by us has received the appreciation of both Turkish and overseas farmers. ISO 9001-2000 QUALITY MANAGEMENT SYSTEM CERTIFICATE and CE MARK which has become a legal obligation during the European Community Access period has also been received successfully documenting our quality also in official terms.

Our company targeting to provide Turkish farmers and agriculture with state of the art equipments in world standards has a big contribution to the development of the Turkish agriculture.

1.0 INTRODUCTION

This manual includes the use and maintenance information vis a vis the ÖZDUMAN brand, D-HVM model Disc Pneumatic Seed Drill Machines and issues to be paid attention to while using it.

This manual should, at the same time, be deemed as a part of the product which is a source to be referred to and acquire information for a secure and efficient performance during the usage period thereof. As such, please keep it in a convenient place showing due care of it.



This security symbol is employed with a view to providing messages regarding safety.

Please read and apply the relevant safety notes upon perception of this symbol to prevent serious injuries.

The user and the client have to attentively read and implement the instructions specified for the very safety thereof and in order to be protected from potential accidents. As such, the machine must only be used by experts who have read this book completely through showing utmost attention to the technical information and accidental measures under all circumstances.

It should be noted that the user is liable for monitoring and checking the use of the machine in the most convenient conditions in terms of human and environmental health and safety.

1.1 GUARANTEE

Please control the machine upon the delivery thereof. Should any failures be germane to transportation and delivery, the case should be reported to the Technical Service of our company within 7(seven) days.

The producer company does not accept responsibility due to failures arising from not paying due attention to instructions indicated hereby or any kind of negligent employment of the user.

The producer company is always ready to provide technical support promptly and meticulously with the intent of ensuring the best operation of the machine and receiving utmost efficiency.

The guarantee is limited to change and repair of parts with failure. The client has to check all the functions of the machine prior to each seeding work. The agent, operator of this machine or the owner thereof are obliged to comply with all notifications and instructions provided within this book. No compensation claims can be made due to loss of products, property or life.

Please contact the Authorized Service in case of any problems you encounter regarding your machine.

USEFUL LIFE:

Typical useful life of the machine is 10 years.

1.1.1 GUARANTEE PERIOD

The Guarantee Period for the machine is 2 years

The following conditions stipulated here below shall be valid in addition to the supply agreement:

1. The purview of the guarantee regarding production and assembly failures covers two(2) years
2. All kinds of failures to occur within the guarantee period have to be reported to our company.
3. Any maintenance and repair concerning the failures, save the ones the user is allowed to perform, leads to deprivation of guarantee rights.
4. In cases of failure due to production or assembly within the guarantee term, the product will be repaired without claiming any costs for labor, spare parts or other costs under any name.
5. The two-year guarantee incident to production and assembly failure of the product shall not cover the following terms and conditions:
 - a.) Should the failure not be reported to the authorized service immediately upon the occurrence thereof.
 - b.) Should the client not render the required time for the performance of the needed actions and repair.
 - c.) Should the repair works not be performed through the authorized service.
 - d.) Should the failure or damage be due to erroneous maintenance and operation
 - e.) If the original parts have not been used.
 - f.) Operator failures.

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- g.) Wear and breakage of wheels.
- h.) Failures and damage due to using in appropriate media .
- i.) Failing to perform the periodic maintenance.
- j.) Failing to timely perform the maintenance and failures arising there from.
- k.) All kinds of wears and abrasion on the coating of the machine
- l.) All kinds of Failure and damages to occur during the shipment of the product.
- m.) Loss of production and all other losses due to breakdown and all kinds of damages reported due to breakdown are out of the purview of the guarantee
- n) Guarantee does not denote insurance.
- o) Transportation to the authorized service or to our factory and the costs incurred are born through the client completely for products that are broken down within the guarantee period.
- p) Any failure rising from improper usage contrary to the methods and conditions stipulated in the Usage Manual provided with the machine are out of the guarantee coverage.

1.2 IDENTIFICATION OF THE SEEDING MACHINE

This machine referred to as Disc Pneumatic Seed Drill Machine is an agricultural machine driven only through the Cardan transmission and the tail axle of the tractor and operates with the hydraulic lifting unit and the universal three point linkage system.

This machine allows you precise seeding actives while seeds with various natures can be planted to all kinds of processed soils. The seeding machine operates by virtue of a pneumatic (aired) system and can be equipped with various accessories such as fertilizer hopper and additional seeding units. The most specific feature of the seeding machine is the ease of usage along with the design simplicity thereof.

The seeding machine has to be employed only for seeding the fields. Any kind of usage save the ones specified in this manual may damage the machine and cause serious risks to the user thereof.

The proper operation of the machine depends upon the proper usage thereof as well as maintenance to be performed with regular intervals. All issues to impede the proper use

of the machine have to be paid considered attentively .As such, all the warnings and the rules specified in the manual have to be abided by with due care and attention.



The producer company is not liable for failures arising from not paying attention to the rules specified hereby or from the negligence of the user.

The producer company is always at your disposal with a view to providing a prompt and meticulous technical support to obtain the best operation and enjoyment of maximum performance of the machine.

Please contact the **Authorized Service** in case of any failure concerning your machine.

1.3 TECHNICAL SPECIFICATIONS

Specs	Unit	4 D-HVM	5 D-HVM	6 D-HVM
Number of Units	piece	4	5	6
Total length	mm	3000		3800
Height	mm	1600		
Width	mm	1600		
Row Gap Distance	mm	250 x 900		
Seed Hopper Capacity	1.	24x4	24x5	24x6
Fertilizer Hopper Capacity	1.	360		450
PTO (rpm)	d/d	540		
Weight without fertilizer	Kg	750	850	950
Weight without fertilizer *	Kg	1100	1200	1300
Tires	Type	5,00 x 15	6,5/80x15	6,5/80x15
Engine Power	HP	60	70	80

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(*) Weight of the machine with empty hoppers.

NOTE: The values indicated in the table are not binding. The producer company preserves the right of making modifications on these values and models .

1.4 IDENTIFICATION OF THE MACHINE

(1)		
DISC PNEUMATIC SEED DRILL MACHINE MODEL D-HVM (7)	TYPE:	(2)
	UNLOADED WEIGHT:	(3)
	LOADED WEIGHT:	(4)
	SERIAL NO:	(5)
	PRODUCTION YEAR:	(6)
Address:1.Organize Sanayi Böl. Bayrampaşa Cad. Güvençli Sok. No:7 Tel: 0 332 248 23 57 - 58 / 25110 35 (3 Lines) KONYA/TURKEY		

Every machine bears an identification card.

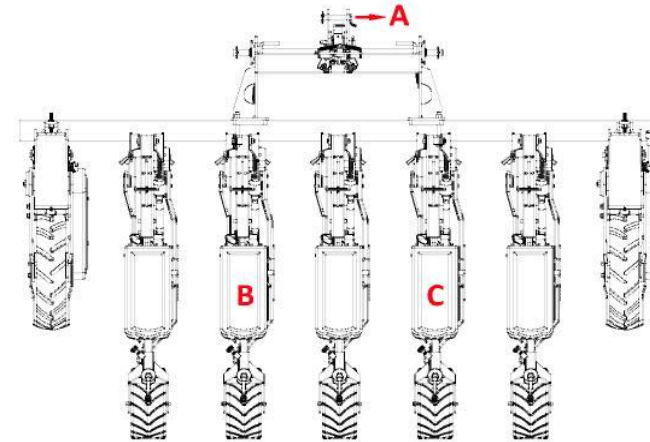
- 1 - Name, title and domicile of the producer company
- 2 - Type of the machine,
- 3 - Unloaded weight (Kg),
- 4 - Weight when loaded with Seed and Fertilizer (Kg),
- 5 - Serial number of the machine,

- 6 - Production year,
- 7 - CE Symbol (European Quality Standard Symbol)

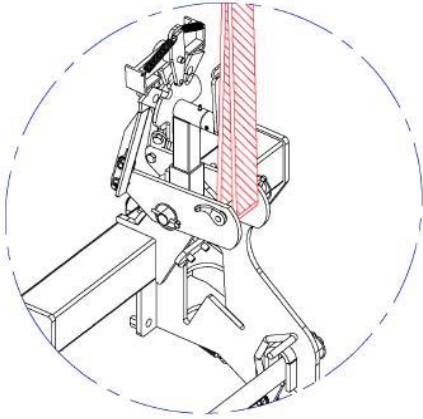
Information hereinabove has to be provided to us while reporting the needs as to spare parts or technical assistance.

1.5 TRANSPORTATION OF THE MACHINE

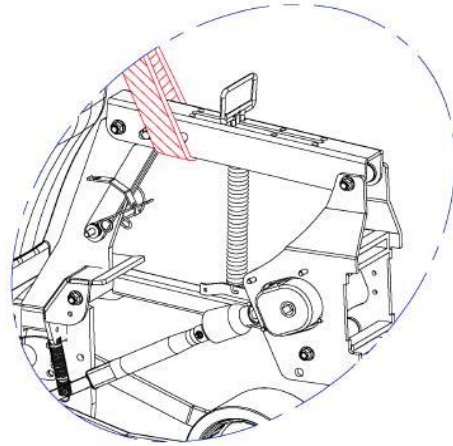
Should the machine be transported, the specified connection parts have to be connected with appropriate hooks and lifting must be performed with an appropriate lift having sufficient capacity. Inasmuch as such operations may cause accident when not performed properly same should be performed with competent and trained persons on this issue. The weight of the machine is specified on the identification plate thereof. Keep the chain or the rope tense in order to have the machine balanced.



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A-point



B and C - points

The connections during transportation have to be applied at A, B and C points.

1.6 SECURITY WARNING LABELS

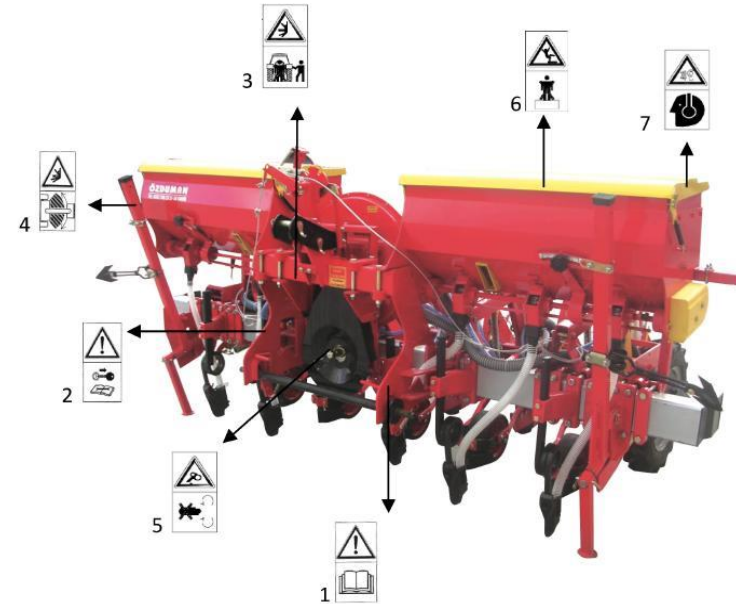
The figure shows the labels and locations thereof placed on the machine. Ensure to prevent the occurrence of any damages thereto. Illegible and worn labels should be replaced with new ones. Learn the meanings of descriptions and signs in the best way.

1.6.1 WARNING LABELS

1. Please read with utmost care all the instructions written in the manual
2. Stop the operation of the machine before commencing maintenance activities and refer to the information provided in the book.

1.6.2 DANGER LABELS

3. Please ensure to keep at safe distance during the first operation with an eye to prevent any risk of being trapped.



4. Stay away in order to prevent the risk of being trapped by the moving parts.
5. Do not put your hand in the revolving parts. Your hand may be exposed to risk of being cut.
6. Danger of falling; it is strictly forbidden to climb on top of the machine.
7. Please use adequate acoustic protection equipments against high noise

1.6.3 INDICATIVE LABELS

8. Label indicating the daily lubrication locations.
9. Instructions for unloading the seeds and the fertilizer in the hopper

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10. Label showing the usage instructions on the machine.
11. Label showing the greasing locations.

2.0 SAFETY INSTRUCTIONS AND ACCIDENT PREVENTION MEASURES

Please pay attention to signs with the danger symbol in the manual



There are three risk levels.

DANGER: This symbol denotes that if the specified operations are not performed and applied in a proper way they may cause serious injuries, death and long-term health risks,

CAUTION: This symbol denotes that if the specified operations are not performed and applied in a proper way they may cause serious injuries, death and long-term health risks,

WARNING: This symbol denotes that if the specified operations are not performed and applied in a proper way they may lead to serious damages in the machine.

The situations and specific identifications specified here below directly may cover both humans and machines in terms of defining the different danger levels.

AREA OF DANGER: denotes an area to cause health risk for a person who will be in the vicinity of the machine.

UNPROTECTED PERSON: denotes a person who is fully or partially within an area of danger.

OPERATOR: denotes the person(s) performing the erection, operation, adjustment, maintenance, cleaning, repair or transfer of the machine.

USER: denotes the person, organization or the company that has bought and leased the machine for the purpose planned thereby

QUALIFIED PERSONNEL: denotes the persons specialized particularly at maintenance and relevant repair works of the machine and warning instructions, and methods for taking actions under various circumstances.

AUTHORIZED SERVICE CENTER: denotes units authorized through the producer and they have personnel specialized at assistance, maintenance and repair related issues within their structure

Please read the instructions carefully prior to usage of the machine and in case of any doubts on any issue contact the authorized agent or our factory. We, as the producer company, do not accept any responsibility for accidents or consequences arising from not implementing the instructions and safety and accident prevention measures specified here below

General Rules:

1. Utmost attention must be given to danger signs shown in this book and on the machine
2. . Safety labels with instructions thereon and glued on the machine are necessary advices to prevent accidents
3. Rules regarding safety and prevention from accidents must be read with due care.
4. It is not allowed to touch moving parts under any circumstances.
5. The engine must be off and the tractor must be at a steady position in order to make any operations or adjustments on the machine

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6 Humans, animals or loads must not be transported on the seeding machines under any conditions.

7. Persons without driving licenses who are not expert or who are not healthy must not use the tractor when the equipment is installed on the machine.

8. Check if all transportation and usage elements are properly placed prior to usage of the tractor and the equipment.

9 Be ensured that there are no humans, particularly children, or animals in the vicinity of the machine, and your vision is perfect and clear.

10. Wear appropriate clothes enabling the performance of your work. Loose clothes and clothes with parts that can be trapped by the tractor or the equipment must be avoided.

11. Be ensured that you know the control and the operation of all of the control devices prior to working.

12. Check if all the cases are in their original locations in a secured and safe way.

13. Do not be in the area where the moving parts of the machines work.

14. It is strictly forbidden to use equipments without hopper covers and cases.

15. Make a visual inspection in the vicinity of the machine prior to leaving the tractor. Pull the hand brakes, take off the ignition key and keep them away from chemical materials.

16. It is strictly forbidden to leave the operator seat while the tractor is in operation.

17. Ensure to have the removal of the abutments and placement of all equipments parts properly, and all positions of the parts are correct and ready for operation prior to operating the equipment.

18. Work always under conditions with good vision

19. All the operations have to be carried out through personnel with required competency incident to the machine. The operations always have to be performed in a secured, clean and dust-free environment.

20. Remember the risk of damage and trapping while making the tractor connections and pay due attention.

21. Do not go beyond the limits appropriate to transportation dimensions, weights and axle loads

22. Drive the tractor more slowly and attentively when the loads and the machine are connected to the machine regarding the potential negative effects thereof on handling the steering wheel and brakes.

Do not put your hand into the seed and fertilizer hoppers when the machine is in operation.

Do not put your hand or any part into the entry part of the place where the gear housings are when the machine is in operation.

25. Driving speed must be maximum **20 km/h** when the machine is connected to the tractor.

26. Long distance transportation must be performed by an appropriate vehicle. Do not drive on the express ways while the machine is connected to the tractor.

27. Keep your use and maintenance manual until the useful life of your machine expires.

28. Provide your spare parts from the producer or agents thereof and use only original parts

29. This use and maintenance manual is intended with an eye to prevent accidents. The rules within the manual must strictly be adhered to.

Rules on connecting the machine to the Tractor:

30. Stop the tractor under all circumstances when performing the connections of the machine and tractor. Pull the hand brakes.

31. Place the hydraulic control lever in the appropriate location while connecting and disconnecting the machine to the tractor since the levers may go up or down accidentally.

32. There is risk of trapping or being squeezed when connecting with the three-point suspension.

33. Pay attention to connect the machine with the tractor in a centered way.

34. Ensure to make two ends of the shaft at the same distance and make same parallel to the ground. Otherwise the discs will be in different locations which will end in improper seeding.

35. Lift the support leg up and fix them to the pin holes.

36. If you will use public roads while the machine is connected to the tractor, make sure to lock the control levers of the hydraulic lifter arms.

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37 Remember that the hydraulic lifting levers are the most dangerous parts of the working area during the coming down and going up of the equipment in the three linkage Disc Pneumatic Seed Drill Machine

38. The shafts of the tractor change the load distribution in the Disc Pneumatic Seed Drill Machine to be connected with three linkages. Check that the seed drill machine which brings the load to three linkage system is appropriate for the load capacity of the tractor. It is recommended to add appropriate loads to the front part of the tractor to balance the load on the axes. If you have any doubts on this issue contact the tractor producer company.

Rules for Transporting on roads:

39. Observe the corresponding local regulations when using public roads

40. All transportation accessories must bear appropriate signs and cases when you are on the road.

41. Remember that the tractor may lose its balance and get out of control due to centrifugal power, because of the width of the machine and weight, when the tractor is turning the bends.

42. Take care of the bends and the chuckholes while driving. The weight center deviations to be caused through the centrifugal power must be carefully considered. Same attention must be shown in rough roads and grounds while driving with or without the equipment.

43. All of the hoppers must strictly be empty when driving on roads.

Cardan transmission (Articulated Shaft):

44. Disc Pneumatic Seed Drill Machine must be used with Cardan transmission bearing shields connected with chains that are resistant against overload and loading

45. The Cardan transmission provided by the equipment supplier company has to be employed.

46. Mount and dismount the Mount and dismount the articulated shaft only when the engine is turned off only when the engine is turned off

47. Use the chains to stop the turning of the cover of the Cardan transmission that are located thereon.

48. Make sure that the protective covers of the Cardan transmission are always in a proper position and in their places during transportation or operation.

49. Make the cleaning and greasing works of the Cardan transmission only when the tail axle is disconnected , engine is off, hand brake is pulled and when the ignition key is taken of

50. Check if there are any humans or animals in the vicinity of the machine or in your working area a prior to operating the tail axle. Do not exceed the acceptable rotation limits of the maximum tail axle.

3.0 USAGE INSTRUCTIONS

Apply the following instructions in order to obtain the best performance from the equipment with due attention.



All maintenance, adjustment and seeding works have to be done when the tractor tail axle is off, and the seed drill machine must be on the ground on the abutments and must be connected with a three linkage system of the tractor if it is a three linkage seed drill and the tractor must not be running, and its wheels must be blocked and the ignition must be closed.

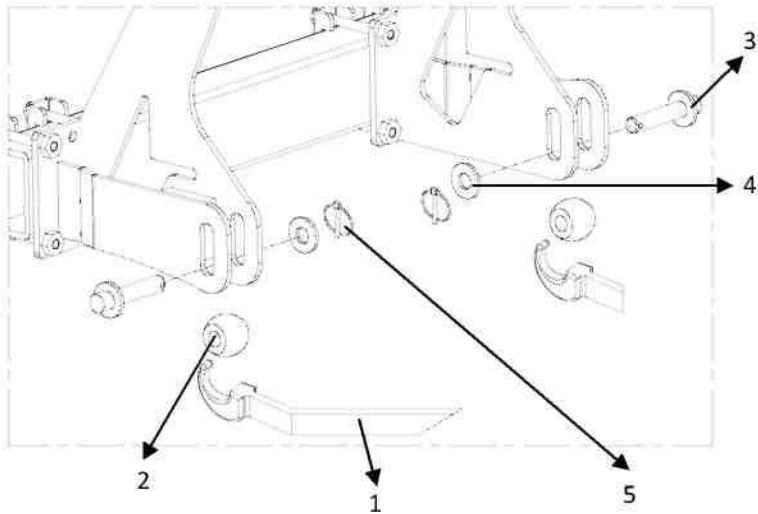
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3.1 MOUNTING THE MACHINE TO THE TRACTOR

The seed drill can be connected to tractors having appropriate power with 3-point suspension system.

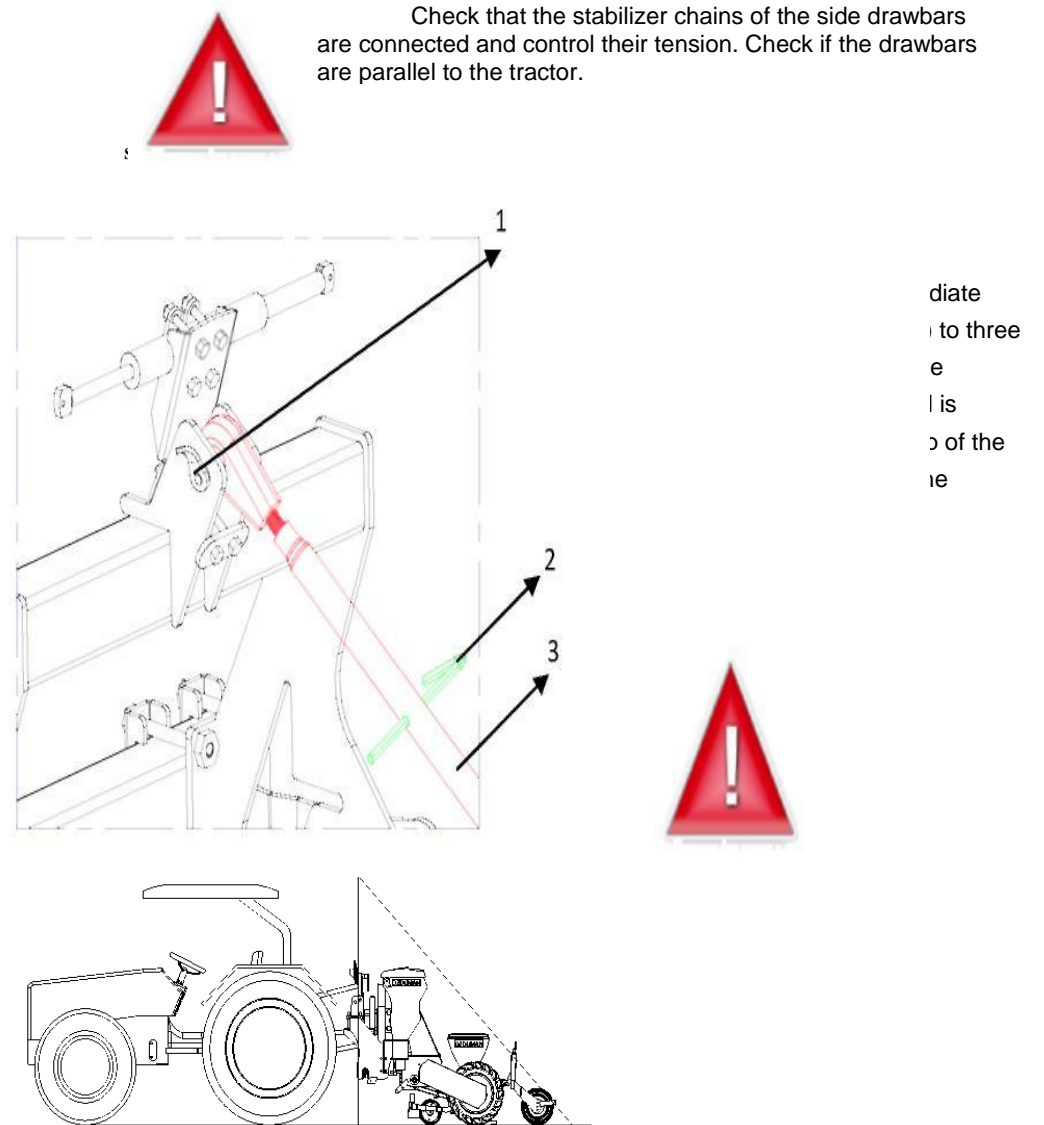
DANGER: Mounting the machine to the tractor is a very dangerous stage. As such, you must pay utmost attention as to the issues specified here below and ensure that nobody has approached in the vicinity of the machine.

3.1.1 MAKING THE CONNECTIONS



1. Mount the purlines (2) on the drawbar (1) of the tractor and lock them

2 Bring the drawbars under the drawbars of the machine. Raise the drawbars namely the lifting units till the drawbar is located in its housing, pass the draw pins through the purlines (2). Mount the draw washers (4) to draw pins(3). Place the spring pins on the draw pins thereby securing them.



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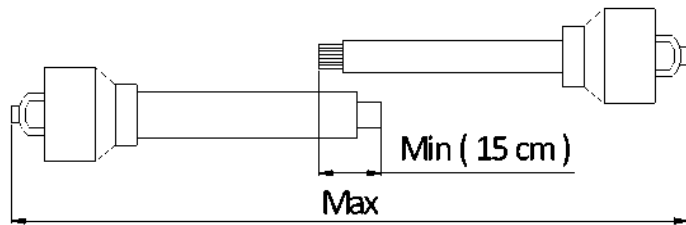
Otherwise you may cause the machine to make undesired movements to sides
ATTENTION: Always take the steps specified by the producer as to the rod of the seed drill machine.

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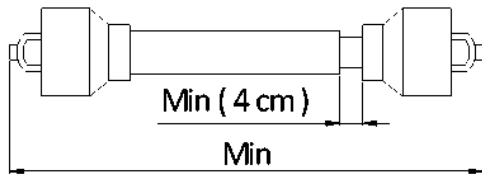
3.2 ASSEMBLY AND ADJUSTMENT OF THE CARDAN TRANSMISSION



The Cardan transmission supplied with the machine is of Standard length. Therefore the compliance of the Cardan transmission with the machine must be maintained. If you experience any difficulty regarding the adjustments of the Cardan transmission contact the producer company for requested adjustments.



As seen on the above figure when the Cardan shaft is pulled to the end a minimum 15cm part of it must overlap.



On the contrary when the Cardan transmission is closed to the end there must be a minimum 4 cm gap

Act in accordance with the instructions of the producer company when you have to transport the machine in traffic. Otherwise our company will not be responsible for accidents occurring.



3.3 SELECTION OF THE PERFORATED PLATE (DISC)

3.3.1 SEED DISTRIBUTER

Perforated plates (discs) in compliance with the type of the seed to be planted must be placed in each of the distributor/seeder units. You have to pay attention that the seeds do not enter the holes. The seeds will be inhaled due to the vacuum created through the fan attach to the perforated holes and stay there and after that the seed falls on the ground due to gravity by stopping the vacuum.

You have to inform the producer as to the type of the seed on ordering your machine.

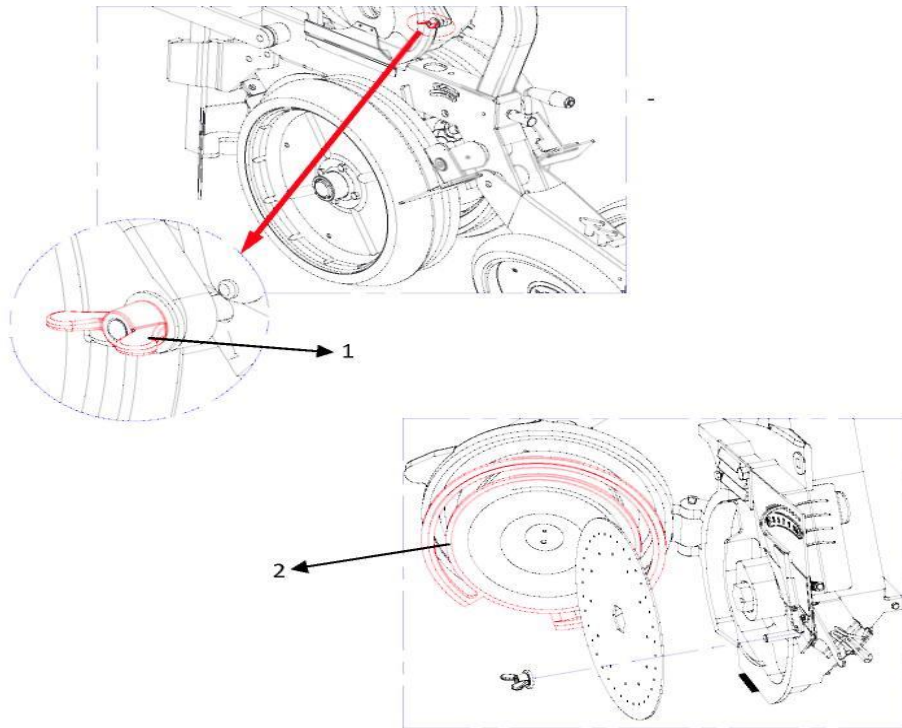
CHANGE AND ADJUSTMENT OF THE PERFORATED PLATE (DISC)



The operations stated here below must be performed by experienced and specialized persons. Protective clothes must be used and the operation must be made in a clean environment

- The seeder machine has to be dry and clean. It must be separate from the tractor and stable
- Unworn and clean plates and parts must be employed.
- Teeth (mixing) on the perforated plates must strictly be complete and straight.
- Should there be any scratches on the disc same must not be more than 1/3 thickness of the disc's thickness

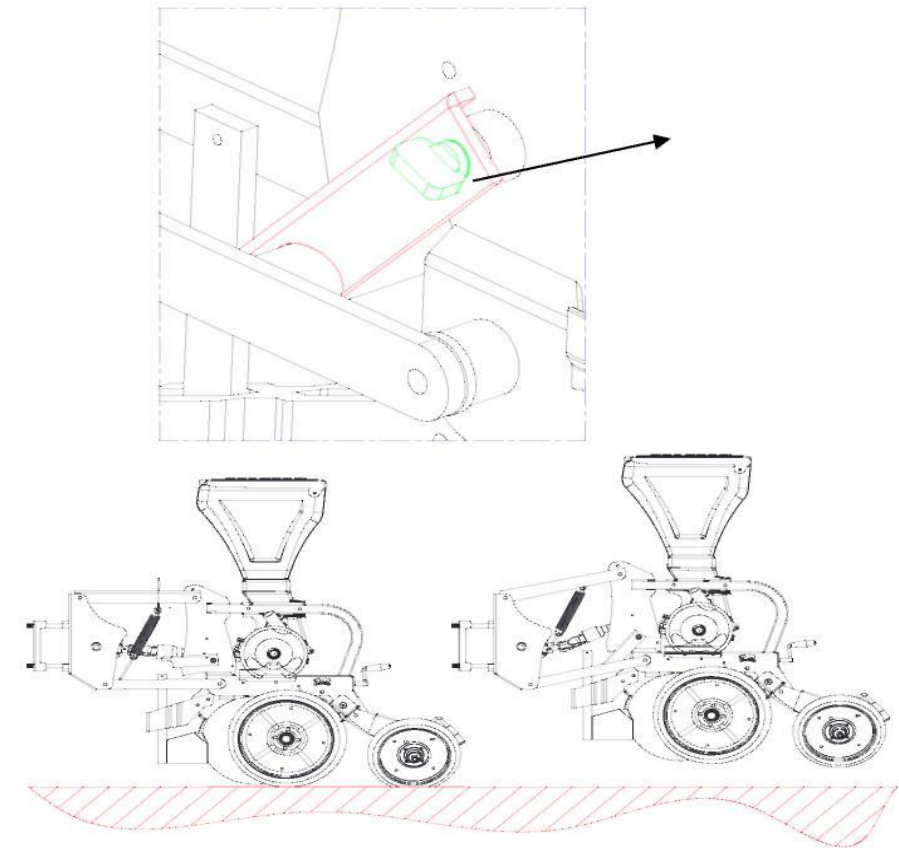
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be replaced. After this the seeder hopper's cover is closed. Butterfly bolt (1) is tightened by hand. The reverse of the 1st stage processes will be done and it will be brought to work position.

SUSPENDING THE UNIT

Locking the unit is performed by lifting to the air by bringing it from its 1st location to



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location.

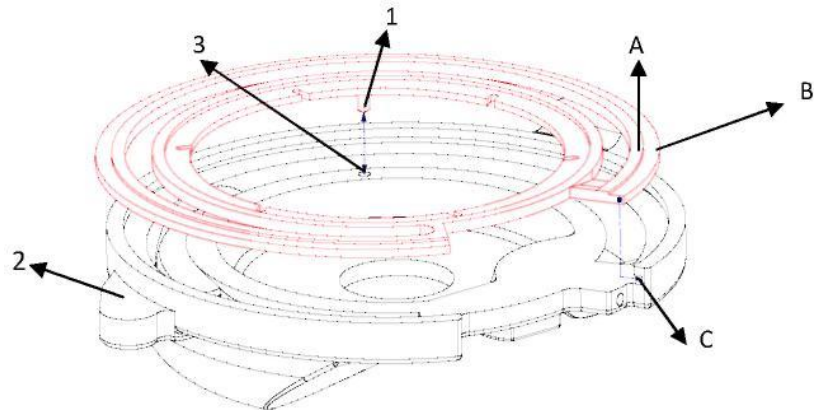
1. position: the unit is in the working position

2. position: the unit is suspended

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3.3.2 CHANGING THE COVER SEAL



Check if the surface of any cover seals of all seeder units are worn out or not.

Because the disc works on the surface of the seal, the seal has to be changed before the A surface comes to same level with B surface. If there are circular scratches on the A surface the seal has to be changed.

The pin (1) on the surface is located to the housing on the cover (2) during the mounting of seal. B surface will be located properly on the C channel

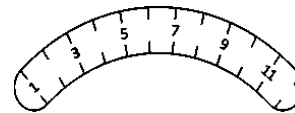
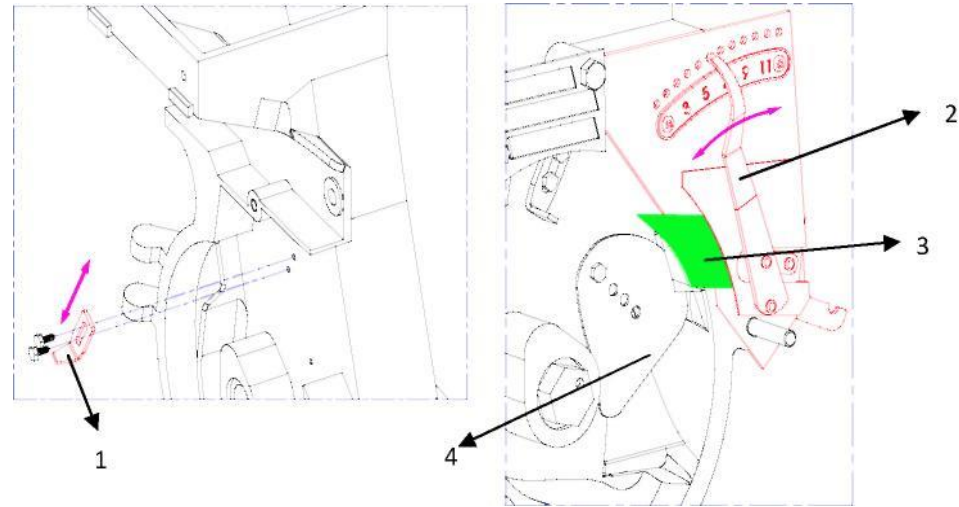
3.3.3 ADJUSTMENT OF THE SELECTOR (SCRAPER) AND SEED FLOW CONTROL COVER

Scraping measures will be adjusted according to the discs at the factory exit. If the adjustment is out of order you can make adjustment by referring to the disc holes by sliding forward or backwards

The selector (scraper) lever has to be connected to the holes with numbers thereon according to the type of the seed to be planted. Thanks to this lever the scraper (3) will get close to or far away from the hole on the disc and drop the excess seeds vacuumed by the disc and decrease the seed loss to minimum.

Skippi

Seed flow control cover can be arranged in different positions. The width of the seed inlet will be arranged thereby preventing the outpouring of the excess seeds. This cover may need adjustment considering the slope of the land or for small sized seeds.. **This adjustment has to be considered when seeding will be performed.**



WATERMELON	7	COTTON	11	CUCUMBER	10
LITTLE SUNFLOWER	11	SUGAR BEET	7	PEANUT	0
MAIZE	11	PUMPKIN	11	CANTALOE	10
BEAN	11	BIG SUNFLOWER	12	BEET	6

3.3.4 ADJUSTMENT OF THE SEED DISTRIBUTION

Adjustment of the distribution is made in accordance with follows:

- The types of the seeds must be classified. Disc selection must be made accordingly in order to be compliant with seeding norm.
- Distance between the seeds (above row adjustment)

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SELECTION OF THE DISC ACCORDING TO THE TYPE OF THE SEED

Seed to planted	Seed Diameter(mm)	Number of seeds	Seed to be planted	Seed Diameter(mm)	Number of seeds
Sunflower for processing	4	20	Pumpkin	5	10
Sunflower for oil extraction	3	20	Chickpeas	6	36
Watermelon	3	10	Covered beets	1,9	36
Cantaloupe	2,5	10	Normal beets	1,7	36
Maize	4,5	26	Little seeded beets	1,5	36
Cotton	3,5	52	Cucumber	1,7	26
Tomato	1,2	144	Onion	1,2	144
Pepper	1,7	104	Soya	4	72
Bean	5	36	peanut	7,5	36
Poppy	0,5	104			

NOTE: The table values are average values. Disc selection according to the size of the seed can be made by the user. The producer company is not liable for wrong disc selection according to the seed and the user will be liable for same

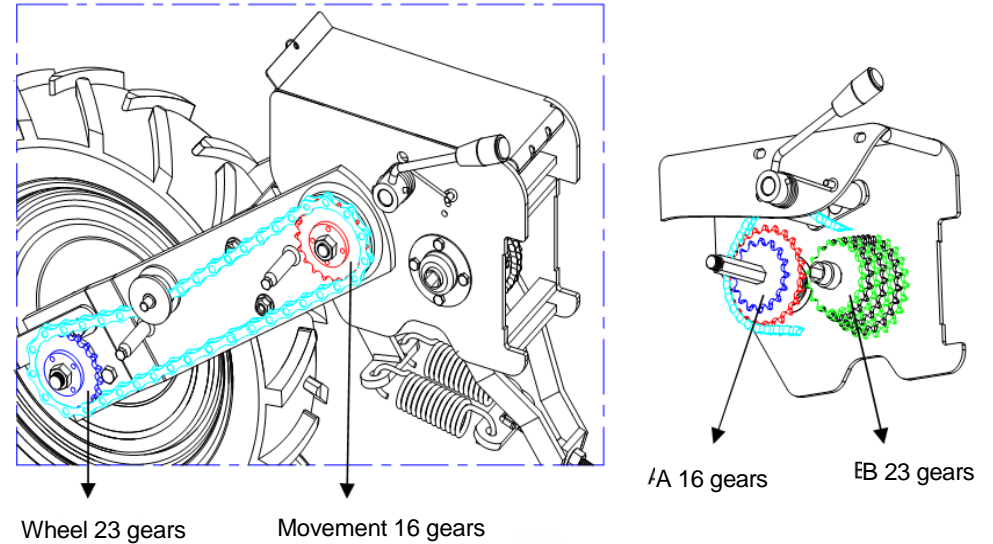
3.3.5DISTANCE BETWEEN THE SEEDS (ABOVE- ROW)

You to have to make some adjustments on the machine, to arrange the above-row adjustments. The disc determined according to the seed will be assembled to the units. After that the drive sprockets have to be adjusted. The drive sprockets will be mounted as 20-20, 16-23 and 23-16 according to the above-row distance in the table. After adjustment is made on the drive sprockets the gears in the transmission box will be adjusted.

Example: Processes as to seeding of covered beet with 9.3 cm distance determined on the seed's above-row seeding table.

Select a disc with a diameter Ø of 1.9 having 36 holes corresponding to covered beet in the disc selection table. As we explained above we shall assemble the units to discs and in the scraping system we place the scraper to the housing number 7 corresponding to sugar beet

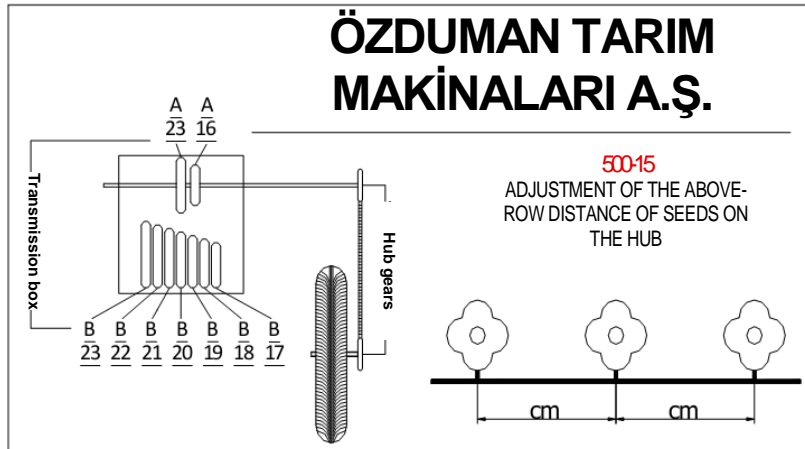
After making these we have to arrange the gears corresponding to 9.3 cm as to the above-row distant of the seeds adjustment table. For this the sprocket kit in the hub for the drive sprockets must be 23 and the sprocket kit driving the transmission box must be 19. After controlling this transmission box gears have to be arranged as A23 - B19 according to the table



ATTENTION: All the processes that are explained above must be checked in each seeding. The above-row distance may differ according to structure of the axle, speed of seeding, structure of the soil, vibration of the machine, scraping organs, moisture condition, land surface, type of seed and etc.

3.3.6 ADJUSTMENT TABLE OF ABOVE-ROW DISTANCE OF SEEDS

500 -15 WHEEL

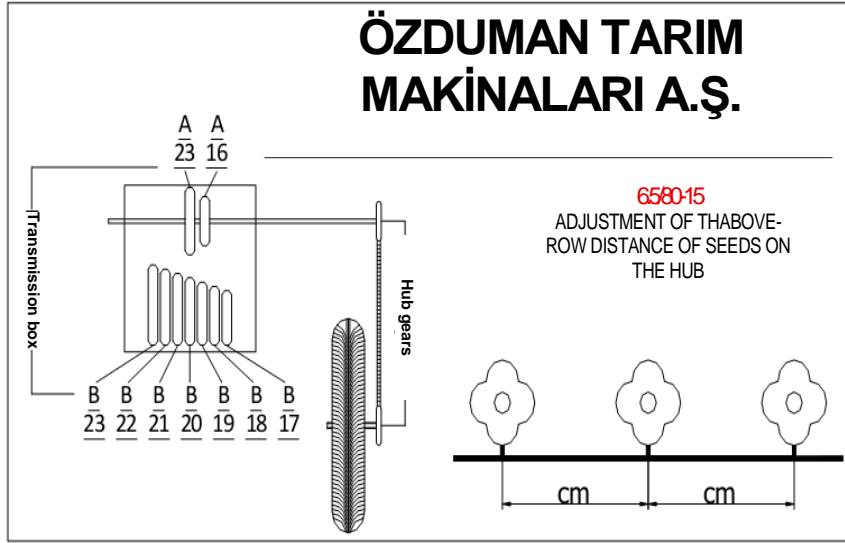


DRIVE SPROCKETS	SPROCKET KIT A - B	10 holes	20 holes	26 holes	36 holes	52 holes	72 holes	144 holes	216 holes
Wheel's position 20gears Movement's position 20gears	23-17	29,8	14,9	11,5	8,3	5,75	4,15	2,1	1,04
	23-18	31,6	15,8	12,2	8,8	6,1	4,4	2,2	1,10
	23-19	33,4	16,7	12,8	9,3	6,4	4,65	2,3	1,16
	23-20	35,2	17,6	13,5	9,8	6,75	4,9	2,5	1,23
	23-21	36,8	18,4	14,2	10,2	7,1	5,1	2,6	1,28
	23-22	38,6	19,3	14,9	10,7	7,45	5,35	2,7	1,34
	23-23	40,4	20,2	15,5	11,2	7,75	5,6	2,8	1,40
	16-17	42,8	21,4	16,5	11,9	8,25	5,95	3,0	1,49
	16-18	45,4	22,7	17,5	12,6	8,75	6,3	3,2	1,58
	16-19	48	24	18,5	13,3	9,25	6,65	3,3	1,66
	16-20	50,4	25,2	19,4	14	9,7	7	3,5	1,75
	16-21	53	26,5	20,4	14,7	10,2	7,35	3,7	1,84
	16-22	55,6	27,8	21,4	15,3	10,7	7,65	3,8	1,91
	16-23	58,2	29,1	22,4	16,1	11,2	8,05	4,0	2,01

DRIVE SPROCKETS	SPROCKET KIT A - B	10 holes	20 holes	26 holes	36 holes	52 holes	72 holes	144 holes	216 holes
Wheel's position 23 gears Movement's position 16 gears	23-17	20,8	10,4	8	5,8	4	2,9	1,45	0,73
	23-18	22	11	8,5	6,1	4,25	3,05	1,53	0,76
	23-19	23,4	11,7	9	6,5	4,5	3,25	1,63	0,81
	23-20	24,4	12,2	9,4	6,8	4,7	3,4	1,70	0,85
	23-21	25,8	12,9	9,9	7,1	4,95	3,55	1,78	0,89
	23-22	27	13,5	10,3	7,5	5,15	3,75	1,88	0,94
	23-23	28	14	10,8	7,8	5,4	3,9	1,95	0,98
	16-17	30	15	11,5	8,3	5,75	4,15	2,08	1,04
	16-18	31,6	15,8	12,2	8,8	6,1	4,4	2,20	1,10
	16-19	33,4	16,7	12,9	9,3	6,45	4,65	2,33	1,16
	16-20	35,2	17,6	13,5	9,8	6,75	4,9	2,45	1,23
	16-21	37	18,5	14,2	10,3	7,1	5,15	2,58	1,29
	16-22	38,8	19,4	14,9	10,8	7,45	5,4	2,70	1,35
	16-23	40,4	20,2	15,5	11,3	7,75	5,65	2,83	1,41
Wheel's position 23 gears Movement's position 16 gears	23-17	42,8	21,4	16,5	11,9	8,25	5,95	2,98	1,49
	23-18	45,4	22,7	17,5	12,6	8,75	6,3	3,15	1,58
	23-19	48	24	18,4	13,3	9,2	6,65	3,33	1,66
	23-20	50,4	25,2	19,4	14	9,7	7	3,50	1,75
	23-21	53	26,5	20,4	14,7	10,2	7,35	3,68	1,84
	23-22	55,6	27,8	21,3	15,4	10,7	7,7	3,85	1,93
	23-23	58	29	22,3	16,1	11,2	8,05	4,03	2,01
	16-17	61,8	30,9	23,7	17,1	11,9	8,55	4,28	2,14
	16-18	65,4	32,7	25,1	18,1	12,6	9,05	4,53	2,26
	16-19	69	34,5	26,5	19,1	13,3	9,55	4,78	2,39
	16-20	72,4	36,2	27,9	20,1	14	10,1	5,03	2,51
	16-21	76,2	38,1	29,3	21,1	14,7	10,6	5,28	2,64
	16-22	79,8	39,9	29,7	22,1	14,9	11,1	5,53	2,76
	16-23	83,4	41,7	32,1	23,2	16,1	11,6	5,80	2,90

USE AND MAINTENANCE MANUAL

500 -15 WHEEL



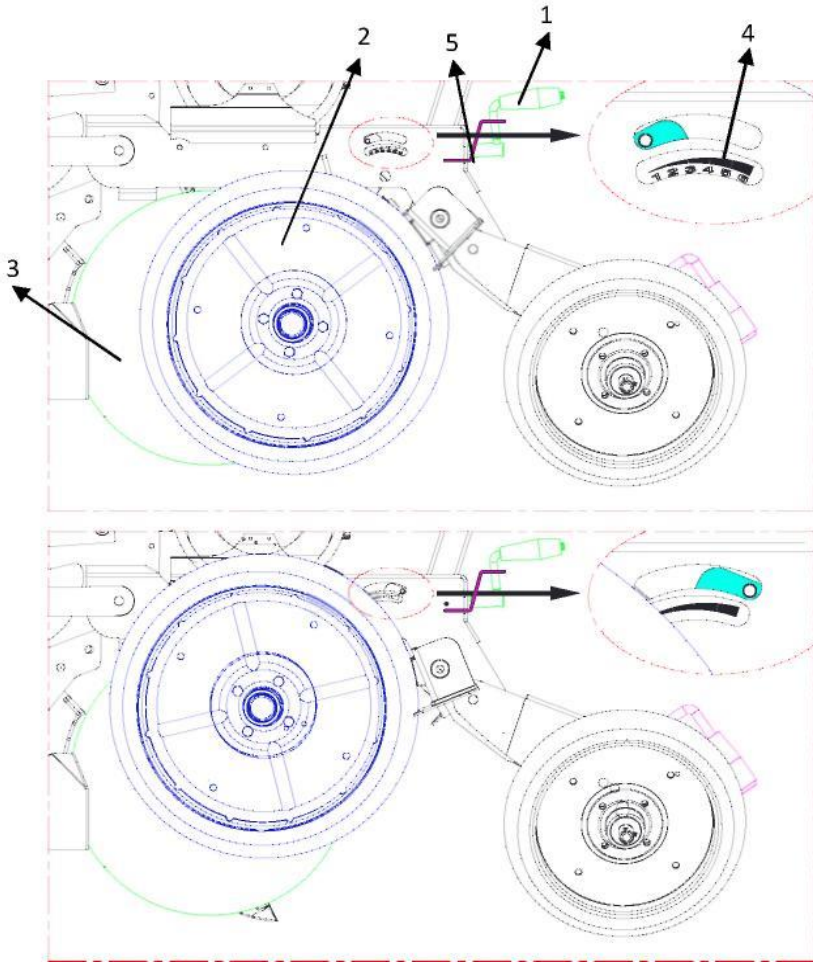
DRIVE SPROCKETS	SPROCKET KIT A - B	10 holes	20 holes	26 holes	36 holes	52 holes	72 holes	144 holes	216 holes
Wheel's position 23 gears Movement's position 16 gears	23-17	21,8	10,9	8,4	6	4,2	3	1,50	0,75
	23-18	23	11,5	8,9	6,4	4,45	3,2	1,60	0,80
	23-19	24,4	12,2	9,4	6,8	4,7	3,4	1,70	0,85
	23-20	25,6	12,8	9,9	7,1	4,95	3,55	1,78	0,89
	23-21	27	13,5	10,4	7,4	5,2	3,7	1,85	0,93
	23-22	28,2	14,1	10,8	7,8	5,4	3,9	1,95	0,98
	23-23	29,4	14,7	11,3	8,2	5,65	4,1	2,05	1,03
	16-17	31,2	15,6	12	8,7	6	4,35	2,18	1,09
	16-18	33,2	16,6	12,8	9,2	6,4	4,6	2,30	1,15
	16-19	35	17,5	13,5	9,7	6,75	4,85	2,43	1,21
	16-20	36,8	18,4	14,2	10,2	7,1	5,1	2,55	1,28
	16-21	38,6	19,3	15	10,7	7,5	5,35	2,68	1,34
	16-22	40,4	20,2	15,6	11,3	7,8	5,65	2,83	1,41
16-23	42,4	21,2	16,3	11,8	8,15	5,9	2,95	1,48	
DRIVE SPROCKETS	SPROCKET KIT A - B	10 holes	20 holes	26 holes	36 holes	52 holes	72 holes	144 holes	216 holes
Wheel's position 23 gears Movement's position 16 gears	23-17	45	22,5	17,3	12,5	8,65	6,25	3,13	1,56
	23-18	47,2	23,6	18,3	13,2	9,15	6,6	3,30	1,65
	23-19	50,4	25,2	19,4	14	9,7	7	3,50	1,75
	23-20	53	26,5	20,4	14,7	10,2	7,35	3,68	1,84
	23-21	55,6	27,8	21,4	15,4	10,7	7,7	3,85	1,93
	23-22	58,2	29,1	22,4	16,2	11,2	8,1	4,05	2,03
	23-23	60,8	30,4	23,4	17	11,7	8,5	4,25	2,13
	16-17	64,8	32,4	24,9	18	12,5	9	4,50	2,25
	16-18	68,6	34,3	26,4	19	13,2	9,5	4,75	2,38
	16-19	72,4	36,2	27,8	20,1	13,9	10,1	5,03	2,51
	16-20	76	38	29,3	21,2	14,7	10,6	5,30	2,65
	16-21	80	40	30,8	22,2	15,4	11,1	5,55	2,78
	16-22	83,8	41,9	32,2	23,4	16,1	11,7	5,85	2,93
16-23	87,6	43,8	33,7	24,3	16,9	12,2	6,08	3,04	

DRIVE SPROCKETS	SPROCKET KIT A - B	10 holes	20 holes	26 holes	36 holes	52 holes	72 holes	144 holes	216 holes
Wheel's position 20 gears Movement's position 20 gears	23-17	31,2	15,6	12	8,7	6	4,35	2,2	1,09
	23-18	33,2	16,6	12,7	9,2	6,35	4,6	2,3	1,15
	23-19	35	17,5	13,5	9,5	6,75	4,75	2,4	1,19
	23-20	36,8	18,4	14,1	10,2	7,05	5,1	2,6	1,28
	23-21	38,6	19,3	14,8	10,7	7,4	5,35	2,7	1,34
	23-22	40,6	20,3	15,6	11,2	7,8	5,6	2,8	1,40
	23-23	42,4	21,2	16,3	11,7	8,15	5,85	2,9	1,46
	16-17	45	22,5	17,3	12,5	8,65	6,25	3,1	1,56
	16-18	47,6	23,8	18,3	13,2	9,15	6,6	3,3	1,65
	16-19	50,2	25,1	19,3	14	9,65	7	3,5	1,75
	16-20	53	26,5	20,4	14,7	10,2	7,35	3,7	1,84
	16-21	55,6	27,8	21,4	15,4	10,7	7,7	3,9	1,93
	16-22	58,2	29,1	22,4	16,2	11,2	8,1	4,1	2,03
16-23	60,8	30,4	23,4	16,9	11,7	8,45	4,2	2,11	

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3.4 DEPTH ADJUSTMENTS OF SEEDING UNITS

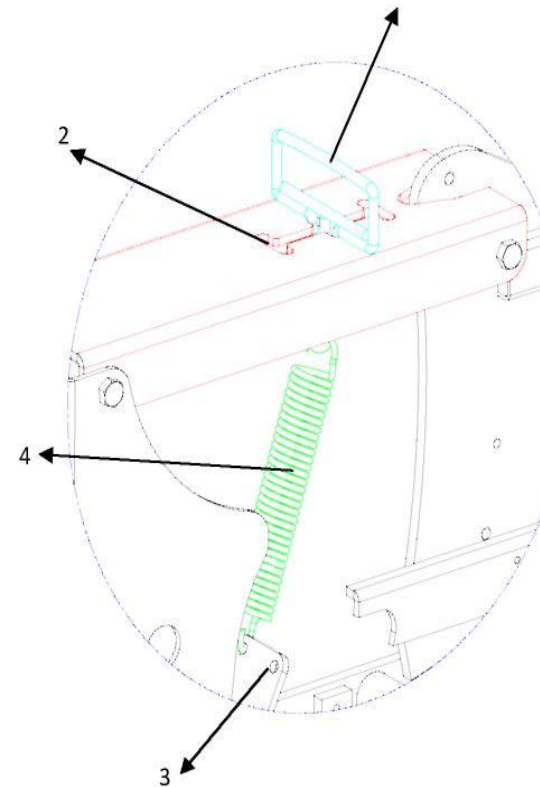
The seeds have to be seeded in the same level on the seed bed in order that they reach the earth level and grow at the same time. The depth adjustments on the machine to this end, maintains the seeding at right depths and an efficient seeding.



wheel's level (2) for the adjustment of the depth. Thus you can arrange the depth the seed will fall after the hole to be opened by the splitter disc. In order to maintain the depth adjustment to be in the same level the scaled ruler (4) is employed to make each unit at the same height. After the adjustments are made the lock spring (4) is placed to the lever (1) and depth changes during seeding are thus prevented.

3.5 PRESSURE ADJUSTMENTS OF THE SEEDING UNITS

The seeding unit has to create a force on the disc in order to split the earth in lines



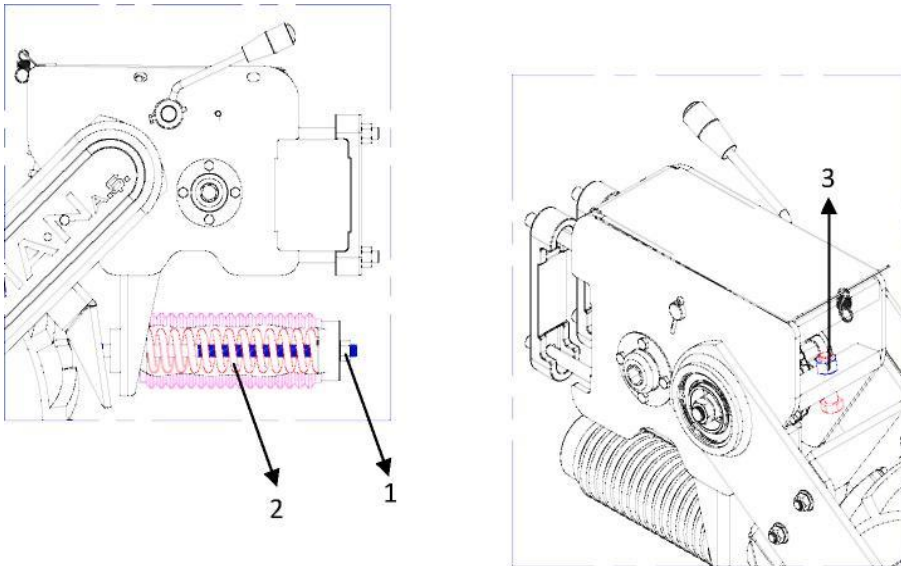
. This pressure has to be increased or decreased according to different types of soils. For this 1 Spring lever (1) is hanged and mounted on the splitters on the unit and the required pressure force is created. If this is not sufficient the pressure spring (4) is attached to the part (3) where the spring is attached and the required pressure force is obtained..

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3.6 DAMPER ADJUSTMENT

Driver wheels are driven by friction force and they may damage the diligence of seeding by causing a stoppage on the wheels by preventing their contact with the ground in badly processed and bad leveled lands. Damper adjustment makes the machine to be more vertical or closer to the soil, making the damper adjustment enables the machine to enter into the soil easier and prevents the dragging of the wheel. The wheel is hinged while the spring is tensioned. There is a stop bolt in the articulated part where the wheel is connected in order to enable the wheels to operate in the same distance.

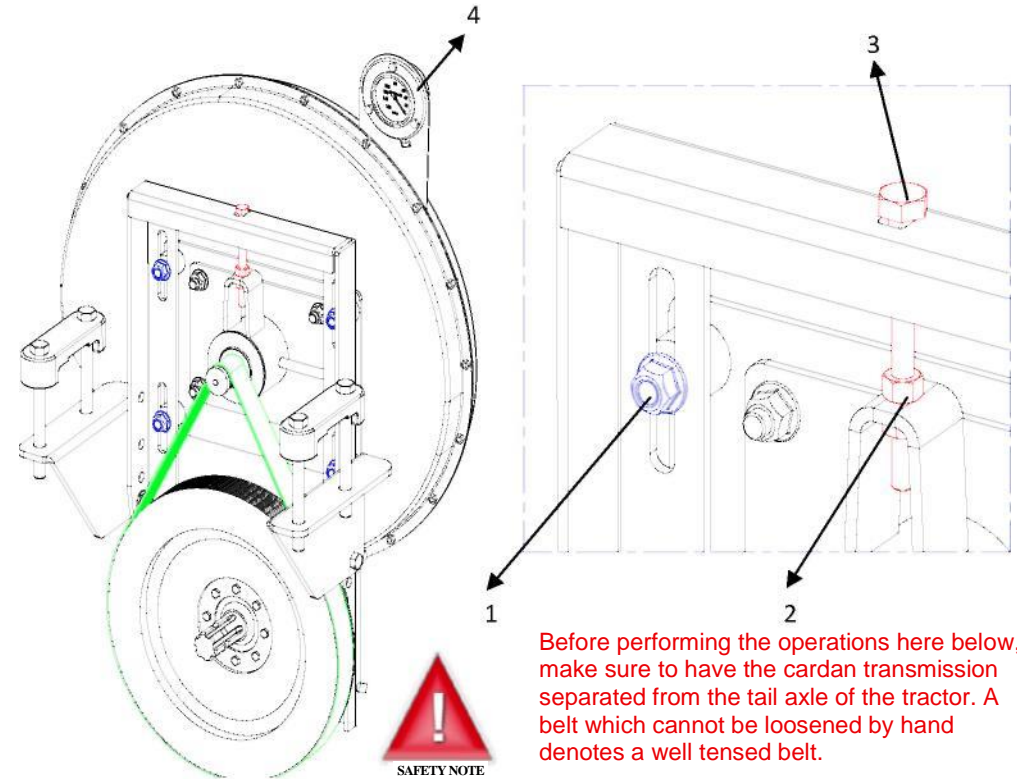
Due attention must be paid to damper adjustment during seeding. Problems rising due to the damper is not binding for the producer company.



You can arrange the height of the damper by the damper bolt (1) Tension springs of both wheels must be identical. You have to adjust the stop bolt s in the same position in order to enable the wheels to operate in the same distance.

3.7 ASPIRATING FAN ADJUSTMENT

Fan causes vacuum effect on the seeds and attaches them to the disc. In this way the seeds can be left to the line opened on above-level distance. Fan vacuums thanks to fins thereon by the drive it receives from the tail axle of the tractor. Tension of elements affecting this vacuum performance have to be checked.



Before performing the operations here below, make sure to have the cardan transmission separated from the tail axle of the tractor. A belt which cannot be loosened by hand denotes a well tensed belt.

The fan housing is removed. All of the 4 slide bolts(1) are loosened. Take-up nut (2) is loosened and it is checked if the belt is worn out. It is replaced if there is wearing. The take-up bolt(3) is tightened and tension of the belt is increased. The bolts loosened previously are again tightened and the process is completed.

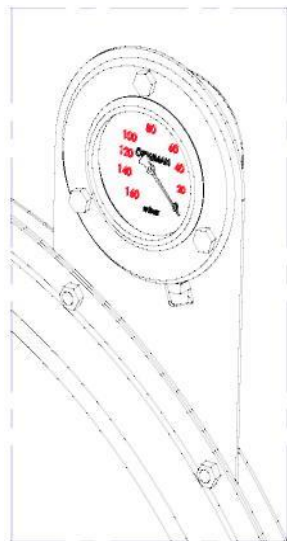
USE AND MAINTENANCE MANUAL

3.7.1 VACUUM GAUGE

You need different vacuum values for the various kinds and types of seeds you will seed. If you cannot arrange these vacuum values in a good way some problems may arise. If you arrange the vacuum values low the seeds may not attach to the wall or in case of a high volume value the disc will attach to the seal to heavy load and difficulties as to turning of the wheels will occur

A good seeding will be performed if it is complied with the different seed and vacuum values indicated here below. You can see this value on the vacuum meter above the fan easily. You can reach the desired vacuum value to be employed through increasing the speed of the engine by the hand accelerator.

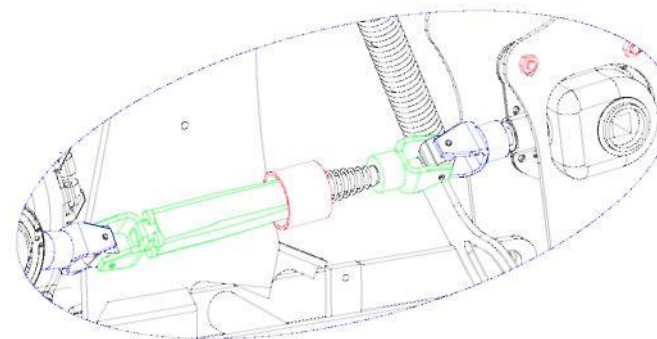
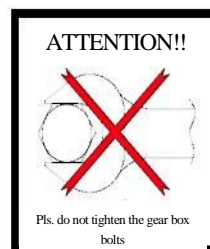
Seeds to be sown	Vacuum Amount m.bar	Seeds to be sown	Vacuum Amount m.bar
Processed sunflower	60-70	Pumpkin	65-70
Sunflower for oil		Chickpeas	70-75
Watermelon	50-60	Coated beet	40-45
Cantaloupe		Nor. beet	
Maize	60-65	Small seed beet	40-45
Cotton		Cucumber	
Tomato	40-45	Onion	50-55
Pepper		Soya	
Beans	65-70	Peanut	70-80
Poppy	40-45		



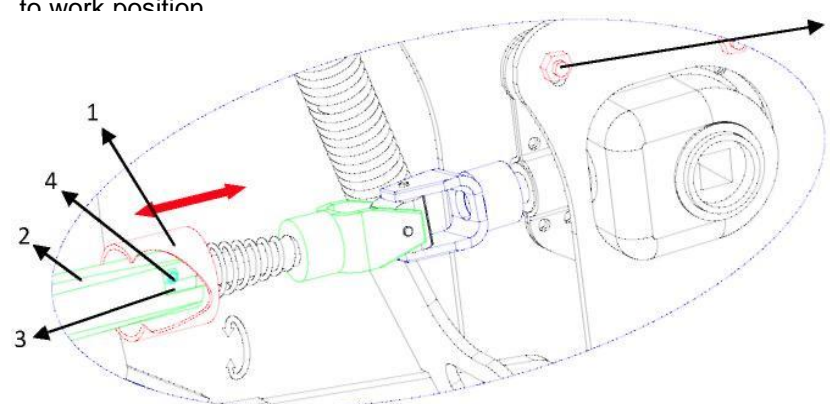
The tail axle is 540 rev/min. Pls apply the indicated tail axle speed. You can reach the desired vacuum value on the vacuum meter in engines with 540 rev/min tail axle is can r

3.8 ADJUSTMENT FOR CANCELLING ANY ONE OF THE SEEDING UNITS

Cancelling one of the seeding units is made e.g. for using a 5-row machine as a 4-row machine. To this end the connection between the transmission box and the seeding hopper is removed. The following is performed for this operation:



Push forward the shaft plastic (1) and take out the pin (4) on the splitter in the pipe. We must attach the pin to the splitter to bring the unit to work position



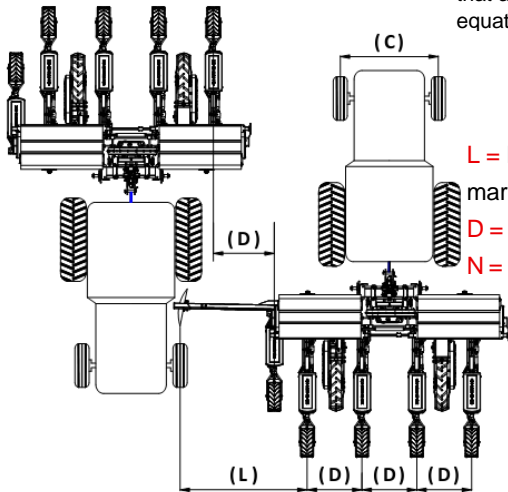
For the realization of the required oscillations do not tighten the shaft box bolts (5) very tightly but let them loose. Such a bolt tightening may damage the operation of the group of gears inside the box and will affect the seed planting will not be properly performed since the work will be affected.

USE AND MAINTENANCE MANUAL

3.9 TRACK MARKER

A track marker denotes a guide which prevents the occurrence of unseeded areas between the lines it makes on the surface of the ground with also prevention of double seeding. Markers are produced in two types as rotating (disc) or hard (spring) and they open lines on the land surface. The tractor follows these straight lines left by the marker by one of the front wheels thereof.

The seeding machine draws a path to be followed in the opposite direction of the previous one. Turning of the marker arms occur by virtue of the tractor hydraulic arms. The marker switch activates mechanically when these arms go up and down. If required a hydraulic control system in addition to this mechanical property can also be mounted on the machine.



L value is given in the table. For the values that are not in the table you may use the equation.

$$L = \frac{Dx(N + 1) - C}{2} = \text{cm}$$

- L = Distance between the outer unit and the marker;
- D = Distance between rows
- N = Number of rows



Check the accuracy of the measurement after first return

EXAMPLE: D = 75 cm; N = 8 row; If C = 190 cm . L = ? cm.

$$L = \frac{75x(8 + 1) - 190}{2} =$$

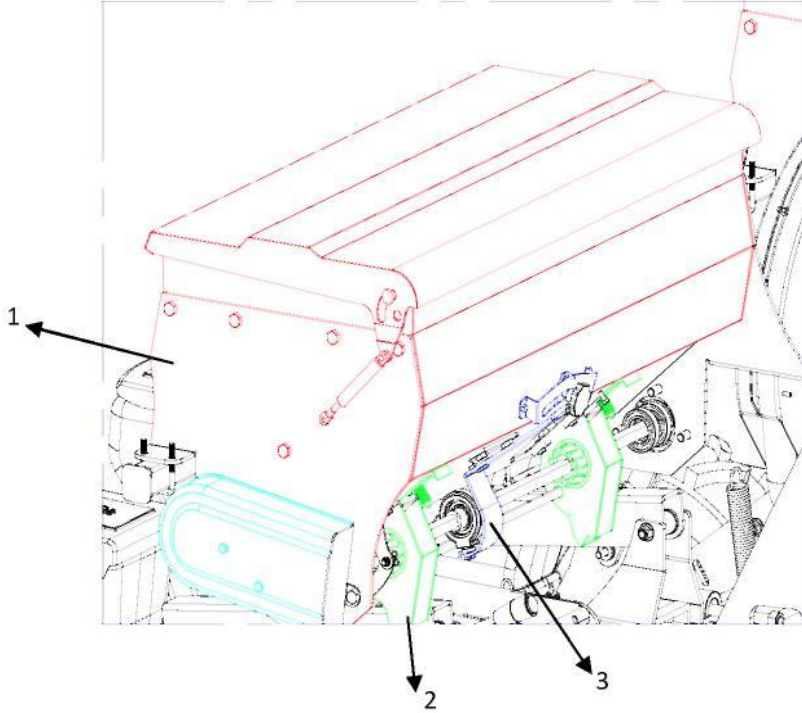
3.9.1 TRACK MARKER ADJUSTMENT

C	D	NUMBER OF SEEDING UNITS								C	D	NUMBER OF SEEDING UNITS							
		2	3	4	5	6	7	8	9			2	3	4	5	6	7	8	9
140	45		20	42	65	87	110	133	155	170	45		5	27	50	72	95	118	140
	50	5	30	55	80	105	130	155	180		50	15	40	65	90	115	140	165	
	60	20	50	80	110	140	170	200	230		60	5	35	65	95	125	155	185	215
	65	27	60	92	125	157	190	223	255		65	12	45	77	110	142	175	208	240
	70	37	70	105	140	175	210	245	280		70	20	55	90	125	160	195	230	265
	75	42	80	117	155	192	230	268	305		75	27	65	102	140	177	215	253	290
145	80	50	90	130	170	210	250	290	330	80	35	75	115	155	195	235	275	315	
	85	57	100	142	185	227	270	313	355	85	42	85	127	170	212	255	298	340	
	45		17	40	62	85	107	130	153	175	45		2	25	47	70	92	115	138
	50	3	27	52	77	102	127	153	178		50		12	37	62	87	112	138	163
	60	17	47	77	110	137	167	198	228		60	2	32	62	92	122	152	183	213
	65	25	57	90	125	155	187	220	253		65	10	42	75	107	140	172	205	238
70	33	67	102	140	172	207	243	278	70		18	52	87	122	157	192	228	263	
75	40	77	115	155	190	227	265	303	75		25	62	100	137	175	212	250	288	
150	80	48	87	127	170	207	247	288	328	80	33	72	112	152	192	232	273	313	
	85	55	97	140	185	225	267	310	353	85	40	82	125	167	210	252	295	338	
	45		15	37	60	82	105	128	150	180	45			22	45	67	90	113	135
	50		25	50	75	100	125	150	175		50		10	35	60	85	110	135	160
	60	15	45	75	105	135	165	195	225		60		30	60	90	120	150	180	210
	65	22	55	87	120	152	185	218	250		65	7	40	72	105	137	170	203	235
70	30	65	100	135	170	205	240	275	70		15	50	85	120	155	190	225	260	
75	32	75	112	150	187	225	263	300	75		17	60	97	135	172	210	248	285	
155	80	45	85	125	165	205	245	285	325	80	30	70	110	150	190	230	270	310	
	85	52	95	137	180	222	265	308	350	85	37	80	122	165	207	250	293	335	
	45		12	35	57	80	102	125	148	185	45			20	42	65	88	110	133
	50		22	47	72	97	122	148	173		50		7	32	57	82	108	133	158
	60	12	42	72	102	132	162	193	223		60		27	57	87	117	148	178	208
	65	20	52	85	117	150	182	215	248		65	5	37	70	102	135	168	200	233
70	28	62	97	132	167	202	238	273	70		13	47	82	117	152	188	223	258	
75	35	72	110	147	185	222	260	298	75		20	57	95	132	170	208	245	283	
160	80	43	82	122	162	205	242	283	323	80	28	67	107	147	187	228	268	308	
	85	50	92	135	177	220	262	305	348	85	35	77	120	162	205	248	290	333	
	45		10	32	55	77	100	123	145	190	45			17	40	62	85	108	130
	50		20	45	70	95	120	145	170		50		5	30	55	80	105	130	155
	60	10	40	70	100	130	160	190	220		60		25	55	85	115	145	175	205
	65	17	50	82	115	147	180	213	245		65	2	35	67	100	132	165	198	230
70	25	60	95	130	165	200	235	270	70		10	45	80	115	150	185	220	255	
75	32	70	107	145	182	220	258	295	75		17	55	92	130	167	205	243	280	
165	80	40	80	120	160	200	240	280	320	80	25	65	105	145	185	225	265	305	
	85	47	90	132	175	217	260	303	345	85	32	75	117	160	202	245	288	330	
	45		7	30	52	75	97	120	143	195	45			15	37	60	83	105	128
	50		17	42	67	92	117	143	168		50		2	27	52	77	103	128	153
	60	7	37	67	97	127	157	188	218		60		22	52	82	112	143	173	203
	65	15	47	80	112	145	177	210	243		65		32	55	97	130	163	195	228
70	23	57	92	127	162	197	233	268	70		8	42	77	112	147	183	218	253	
75	30	67	105	142	180	217	255	293	75		15	52	90	127	165	203	240	278	
170	80	38	77	117	157	197	237	278	318	80	23	62	102	142	182	223	263	303	
	85	45	87	130	172	215	257	300	343	85	30	72	115	157	200	243	285	328	

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3.10 FERTILIZER RELEASE SYSTEM

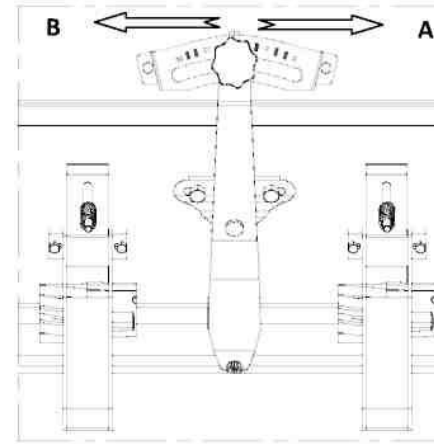
Fertilizer pouring is performed thanks to openings (2) mounted under the fertilizer hopper (1). Thanks to Fertilizer measuring lever (3) you can easily adjust the amount of table to be poured by using the table here below



3.10.1 ADJUSTMENT OF FERTILIZER MEASURING LEVER

Thanks to the fertilizer measure lever you can easily adjust the amount of fertilizer to be poured outside by using the table below

Example 1: In order to release 5.00 x 15 32 kg of fertilizer with 70 row distances in 1000 meters with the elastic seed drill we have to bring the measure arm to the 19th teeth.



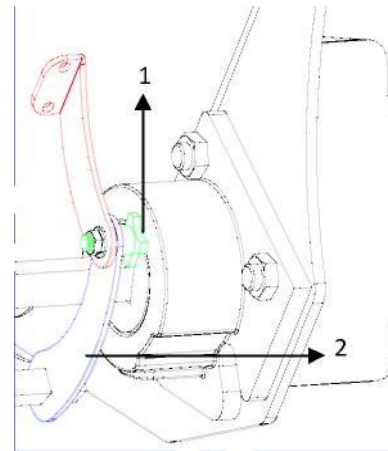
If the fertilizer lever is moved in the A direction, little amounts of fertilizer will be released while big amounts of fertilizer will be released if same is moved in the direction of B.



PAY ATTENTION to open/close positions of the opening covers.

3.10.2 ADJUSTMENT OF FERTILIZER RELEASE

The fertilizer release lever is on the fertilizer hopper. It must be emptied completely after seeding otherwise the fertilizer will oxidize which will pave way to risk of freezing in fertilizer openings. As such, foregoing is made to eliminate this problem and to facilitate the release process.



To empty the fertilizer tank, the knob (1) and all the nuts are removed. Manure discharge lever (2) is turned downwards and the fertilizer is discharged, then we reverse the process and place the handle back again to its place.



Wash thoroughly and dry the fertilizer hoppers after discharging the fertilizers. Lubricate greasing points and openings.

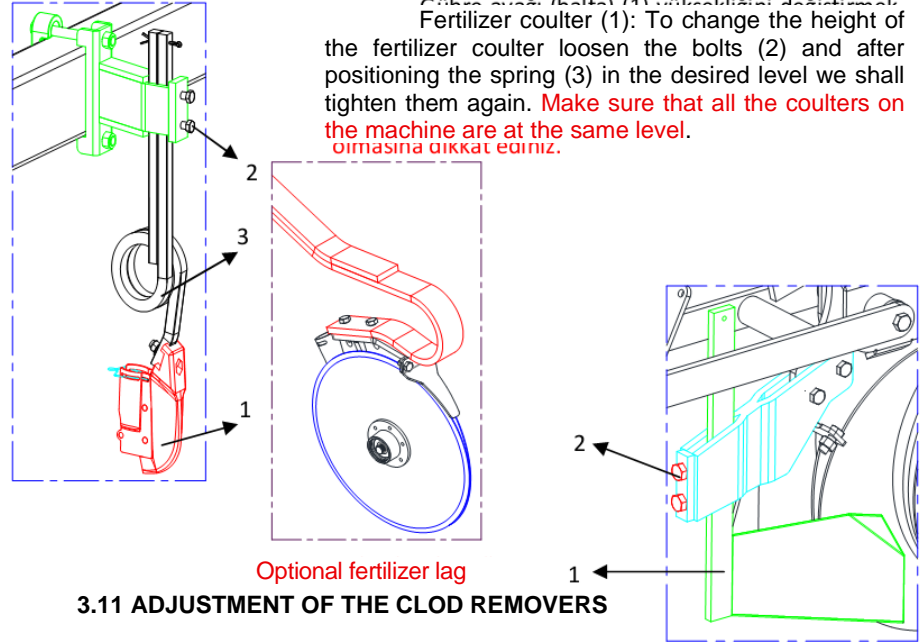
USE AND MAINTENANCE MANUAL

1000 m ² FERTILIZER TABLE FOR 5,00 X 15 WHEEL (Kg)														
OUT-SIDE	BETWEEN THE MACHINE AND THE UNIT													
	25	35	40	45	50	55	60	65	70	75	80	85	90	120
3	10,8	12,3	10,8	9,5	8,6	7,8	7,1	6,6	6,1	5,7	5,3	5	4,7	3,5
5	14	15,9	14	12,4	11,2	10,1	9,3	8,6	FER	7,4	6,9	6,5	6,2	4,6
7	19,2	21,8	19,2	17	15,3	13,9	12,7	11,7	10,9	10,1	9,5	9	8,5	6,3
9	24,4	27,8	24,4	21,6	19,5	17,6	16,2	14,9	13,8	12,9	12,1	11,4	10,8	8
11	28	31,9	28	24,8	22,4	20,2	18,6	17,2	15,9	14,8	13,9	13,1	12,4	9,2
13	34,7	39,5	34,7	30,8	27,7	25,1	23	21,3	19,7	18,4	17,3	16,3	15,4	11,4
15	43,7	49,8	43,7	38,8	35	31,6	29,1	26,8	24,9	23,2	21,8	20,5	19,4	14,4
17	52,5	59,8	52,5	46,6	42	38	34,9	32,2	29,9	27,8	26,2	24,6	23,3	17,3
19	56,2	64,1	56,2	49,9	45	40,7	37,4	34,5	32	29,8	28	26,4	24,9	18,6
21	61,2	69,8	61,2	54,3	49	44,3	40,7	37,6	34,8	32,5	30,5	28,8	27,1	20,2
23	65	74,1	65	57,7	52	47	43,2	39,9	37	34,5	32,4	30,5	28,8	21,5
25	68,7	78,3	68,7	61	55	49,7	45,7	42,2	39,1	36,5	34,3	32,3	30,5	22,7
27	73,7	84	73,7	65,4	59	53,3	49	45,3	42	39,1	36,8	34,6	32,7	24,4
29	76,2	86,9	76,2	67,7	61	55,2	50,7	46,8	43,4	40,5	38	35,8	33,8	25,2
31	82,5	94	82,5	73,2	66	59,7	54,9	50,6	46,9	43,8	41,1	38,8	36,6	27,3
33	88,7	101	88,7	78,8	71	64,2	59	54,5	50,5	47,1	44,3	41,7	39,4	29,3
35	91,2	104	91,2	81	73	66	60,7	56	51,9	48,4	45,5	42,9	40,5	30,2

1000 m ² FERTILIZER TABLE (Kg) FOR 6,5 / 80 X 15 WHEEL (Kg)														
OUT-SIDE	BETWEEN THE MACHINE AND THE UNIT													
	25	35	40	45	50	55	60	65	70	75	80	85	90	120
3	9,6	11	9,6	8,5	7,6	6,9	6,3	5,9	5,4	5,1	4,8	4,5	4,2	3,2
5	12,4	14,2	12,4	11	9,9	9	8,2	7,6	7,1	6,6	6,2	5,8	5,5	4,1
7	17,1	19,5	17,1	15,2	13,6	12,4	11,3	10,5	9,7	9	8,5	8	7,6	5,7
9	21,7	24,8	21,7	19,3	17,3	15,8	14,4	13,3	12,4	11,5	10,8	10,2	9,6	7,2
11	24,9	28,5	24,9	22,1	19,9	18,1	16,5	15,3	14,2	13,2	12,4	11,7	11	8,3
13	30,9	35,3	30,9	27,4	24,7	22,4	20,5	18,9	17,6	16,4	15,4	14,5	13,7	10,3
15	39	44,6	39	34,6	31,1	28,3	25,9	23,9	22,2	20,7	19,4	18,3	17,3	13
17	46,8	53,5	46,8	41,5	37,3	34	31	28,7	26,7	24,8	23,3	22	20,7	15,6
19	50,1	57,3	50,1	44,5	40	36,4	33,3	30,7	28,6	26,6	25	23,5	22,2	16,7
21	54,6	62,4	54,6	48,5	43,6	39,6	36,2	33,5	31,1	29	27,2	25,6	24,2	18,2
23	57,9	66,3	57,9	51,4	46,2	42,1	38,4	35,5	33	30,7	28,9	27,2	25,7	19,3
25	61,3	70,1	61,3	54,4	48,9	44,5	40,7	37,6	34,9	32,5	30,5	28,8	27,2	20,4
27	65,7	75,2	65,7	58,4	52,5	47,7	43,6	40,3	37,5	34,9	32,8	30,9	29,2	21,9
29	68	77,7	68	60,3	54,2	49,4	45,1	41,7	38,7	36,1	33,9	31,9	30,1	22,6
31	73,5	84,1	73,5	65,3	58,7	53,4	48,8	45,1	41,9	39	36,6	34,5	32,6	24,5
33	79,1	90,5	79,1	70,2	63,1	57,5	52,5	48,5	45,1	42	39,4	37,2	35,1	26,4
35	81,3	93	81,3	72,2	64,9	59,1	54	49,9	46,4	43,2	40,5	38,2	36,1	27,1

3.10.3 ADJUSTMENT OF THE FERTILIZER COULTERS

Fertilizer coulters operate at equal intervals with the other coulters and in parallel level with the order of the seeds that are planted. If they are positioned in a way to damage the products please change the distance. This distance with the seed coulters must be min. 5 cm max. 15 cm. You can adjust the height of the fertilizer's coulters by changing the height of the spring. Avoid usage of a too long fertilizer tube to the coulters for prevention of bending. Otherwise, the fertilizer the soil pipe will clog and prevent the fertilizer to be poured down to the soil.



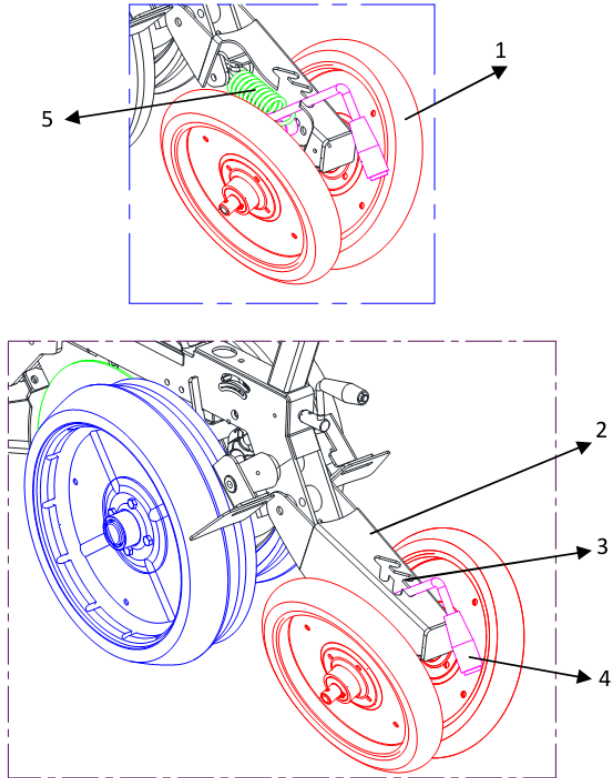
3.11 ADJUSTMENT OF THE CLOD REMOVERS

The clod removers located scrape the soil on the surface of the field with its scraper (1) and close the front part of the seeding coulters. A suitable surface for seeding thus is prepared. The height of the clod remover can be adjusted by sliding the clod remover up and down and fixed by tightening the bolts(2).

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3.12 REAR WHEEL PRESSURE ADJUSTMENT

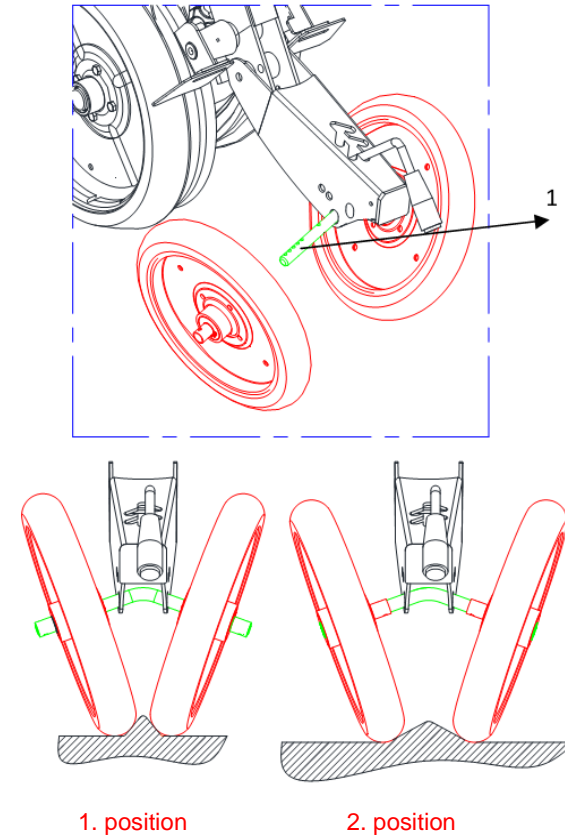
The seeder units in all seeding machine models are connected to the mechanical part in parallel with the other seeding units. The adjustments have to be done according to the nature of the seed and the field appropriately. The pressure of the rear (1) wheel can gradually be increased. The pressure of the wheel to the ground can be adjusted by the spring (5) by assembling pressure handle (4) to the brackets (3).



3.12.1 ADJUSTMENT OF REAR PRESSURE WHEELS

Rear part of the seeding unit is very important in quality seed planting. These elements are used in covering the seed after they are thrown.

For this reason, they have an important and decisive role in terms of yield. The rear pressure system has to be adjusted properly according to the type of soil and the seeds. As shown in the example below, you can change the positions of the rear wheels, using the control shaft (1).

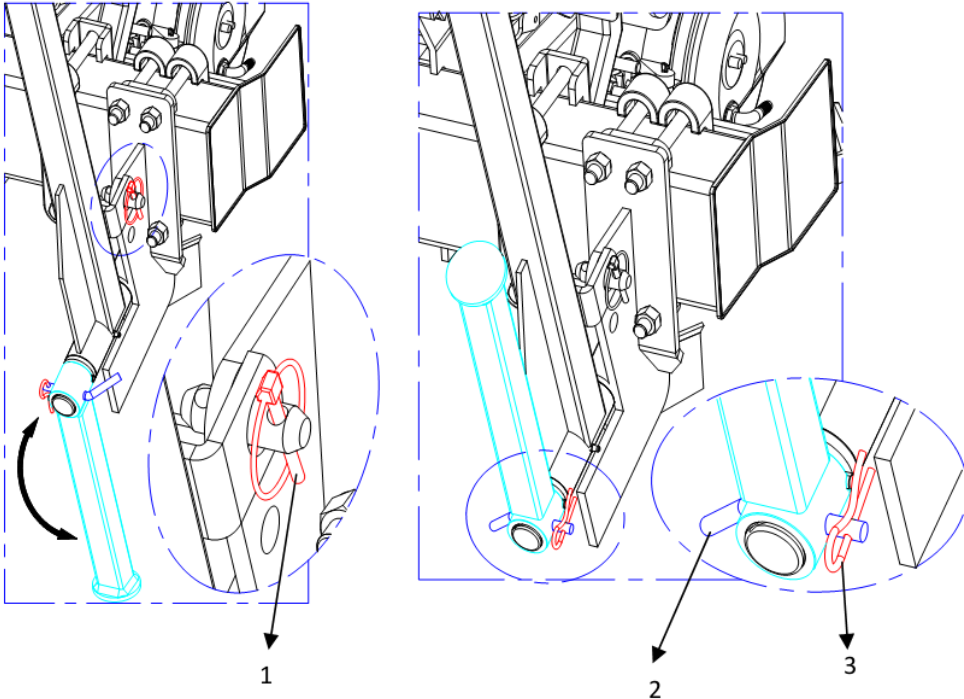


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4.0 PREPARING THE MACHINE FOR SEEDING

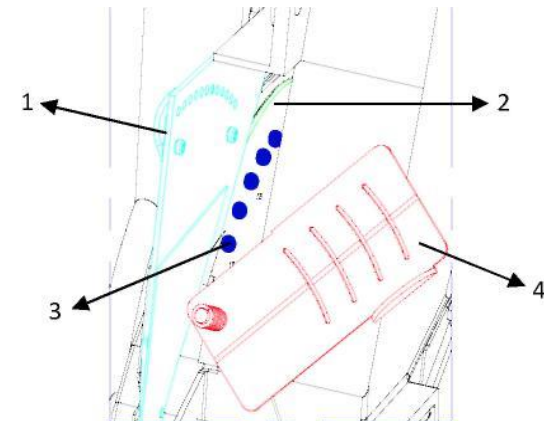
4.1 PREPARING THE MACHINE FOR OPERATION

- Connect the machine to the three-point suspend system of the tractor using the security equipments.
- A Connect the PTO shaft.
- A Lock the safety pin (1) the marker arms in transport when driving on public roads.
- A Put the arm pin of the machine support leg to its socket (2) when driving on public roads or seeding and secure it with retaining ring (3)



4.2 SEEDING ADJUSTMENT

- Find the above-row distance according to the seed distance of the seed to seeded on the seed table.
- A Position firstly the drive sprockets and then the transmission box gears appropriately according to the distance you find on the table
- A Place the seeding discs in seeding units according to the type of the seeds.
- A Put the seeds into the hoppers provided that they are not in an excessive amount. Otherwise, a problem may arise due to clogging by the excessive seeds.
- A Remove the seeder from the tractor operator's seat.
- A Run PTO at 540 rev/min.
- A Pull the hand brake of the tractor should there be a problem with hydraulics, put wedges underneath the seeder.
- A Turn gear wheel by hand in the direction of normal rotation..
- A Adjust the selector on the seeder unit (1) . Check there is a seed (2) over each hole (3) on the discs (2) through the viewing window (4) **During the observation do not cover the viewing window.**



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- Adjust the depth of seeding by the pressure arm over the depth adjustment wheel.
- Adjust the distance of the rear wheels and necessary pressure for closure of the seed line depending on the nature of soil.
- Adjust the soil scraper which will affect preparation of the seed bed . Drive ahead for 3-4 meters along the seed bed while the equipment is running and adjust the parallelability of the coulter to the earth by the middle arm of the three-point suspension system.
- Start the process of sowing after all the settings and controls.
- Check the depth of the soil and that one seed is dropped at each time after you set all the units.

4.3 DURING SEEDING

- At the end of the field at each return, continue to operate the tail axle rotation in an appropriate work cycle. When you stop the tail axle, the seeds cannot attach to the seeder disc and therefore begin to fall. The operation of the tail axle rotation keeps the seeds attached to the seeder disc.
- Check the properness of the seeding during the seeding operation. If it is improper than adjust it by the scrapers.
- If there is loss or decrease in the suction of the fan be sure to check the hoses.
- Clean or replace if there is puncture or obstruction. Check Aspirator belt.



SAFETY NOTE

- **Operate the tail shaft of the tractor in slow and gradual movements. A harsh and sudden movement can damage the fan belt.**

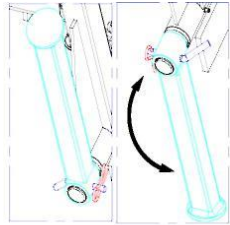
- **Do not strictly maneuver or go backwards when the marker legs of your machine are on the ground. Lift the machine with the three-point suspension system while turning and going back to back.**
- **A Do not exceed the 540 rev / min tail axle speed.**
- **A Do not lift down the machine while tractor is moving. Otherwise the running parts and the ends of the coulters may be damaged..**
- **A Never operate the tail axle in maximum speed while the machine is connected to the tractor.**
- **A Prevent the entry of foreign substances (paper, yarn, stone, etc.) into your machine's hoppers when performing seed and fertilizer supply.**
- **A Do not change any part of the motion transmission shafts. You can severely damage your machine if original parts are not used or parts with a higher tensile strength are used.**

4.4 DISTRIBUTION OF THE CHEMICALS (FERTILIZER)

- Prevent the entry of foreign substances (paper, yarn, stone, etc.) into your machine's hoppers while performing fertilizer supply.
- A Please check the distance between the feet of fertilizer and the seeder. Be careful not to overlap the seed and the fertilizer on the same groove.
- Please note the likelihood of damage of fertilizer to the seed.
- A Check the depth of the fertilizer feet.
- A Adjust the amount of fertilizer you want to discard by using the table. Values "in the table of fertilizers are mean values".
- A Please remember to fix the arms of fertilizers. You may pour more of less fertilizer by considering the possibility of slipping.

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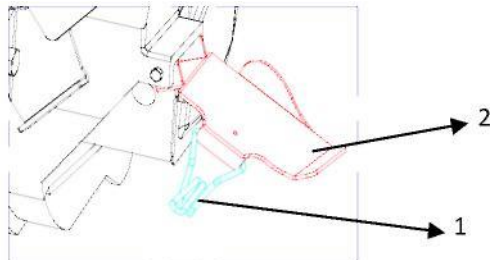
4.5 AT THE END OF WORK (COMPLETION OF SEEDING)



- Stop the PTO.
- Lift the marker arms and bring them to road position. Fix them with safety pins.
- At the end of seeding operation, discharge the remaining seeds in the unit through the discharging section. Cover spring (1) will be removed from the slot and the seeds will be discharged by opening the unloading door (2).

Position at work Position at Park

Remove the hoses from the seeding units and run in out of gear with an eye to provide the disposal of accumulated dust.



- Please make sure that the seed and fertilizer hoppers are empty while on the road for transport. Discharge the seeds and fertilizer
- Observe the corresponding local regulations when using public roads

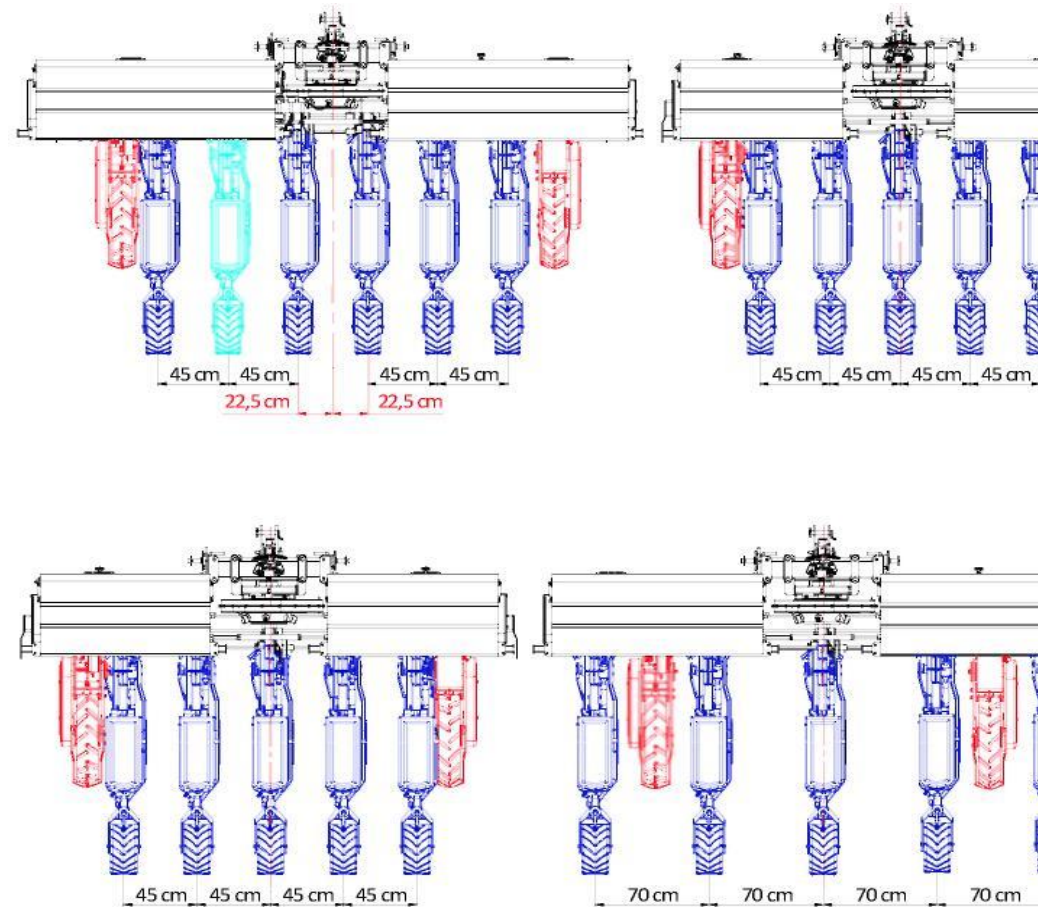
4.6 DAILY PARKING (WAITING PERIOD)

- Please place support legs in parking position.
- Remove PTO shaft.
- Disconnect the equipment from the tractor.
- Wash the equipment with plenty of water
- Remove PTO shaft. Disconnect the equipment from the tractor. Wash the equipment with plenty of water. The hoppers will be thoroughly cleaned and the fertilizers' openings will be lubricated with thin oil. **Please pay due attention especially to the fertilizer's hopper. Do not use diesel or kerosene for openings.**

5.0 CONVERSIONS

5. CONVERSION from 6 ROWS x 45c DISTANCE to 5 ROWS x 45cmDISTANCE

One of the units of the seeding machine is removed with a view to converting a 6-row x 45cm –distance seeding machine to a 5-row x 45cm –distance seeding machine. As seen in the figure, one of the units is assembled on exactly the middle of the chassis and other units are assembled with an interval of 45 cm as two on right side and two on left side. Wheels are excluded from units.

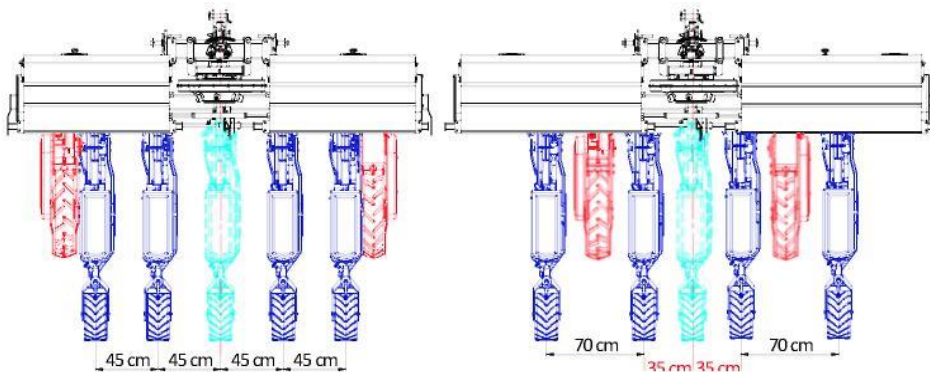


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One of the units of the seeding machine is assembled on exactly the middle of the chassis and other units are assembled with an interval of 70 cm two on right side and two on left side to convert a 5-row x 45cm-distance seeding machine to a 5-row x 70cm-distance one as seen in the figure. Wheels are one of the units are taken inside and connected between the two units.

5.3 CONVERSION from 5 ROWS x 45c DISTANCE to 4 ROWS x 70cmDISTANCE

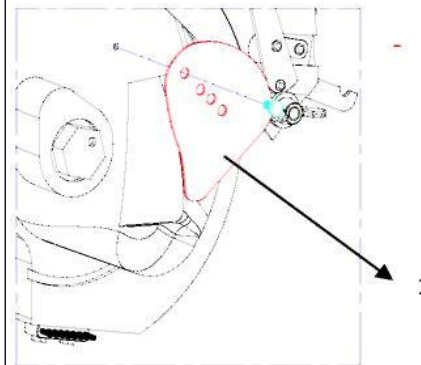
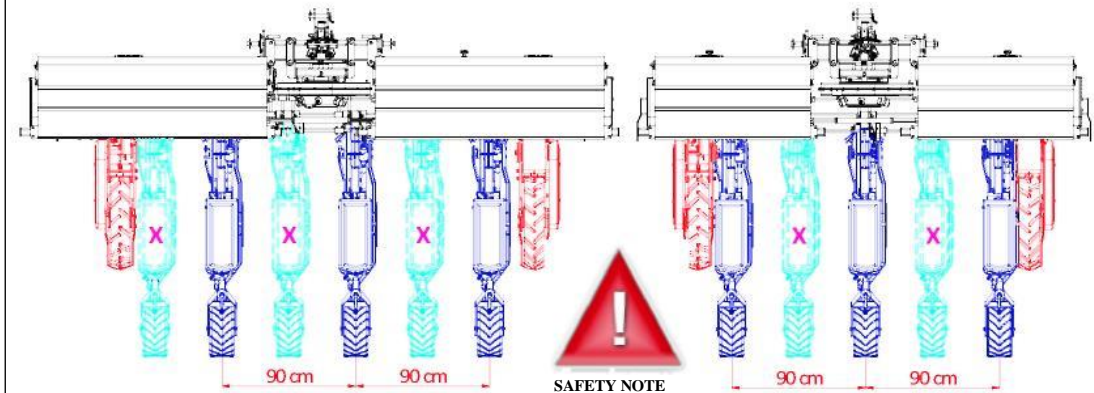
The middle units of the seeding machine that have been disassembled or suspended on two units exactly from the middle of the chassis are assembled with an interval of 35 cm one on the right side and the other on the left side and the other units are slid with an interval of 70cm. Wheels are slid inside and connected between the two units. **What to do with disassembled or suspended units: You must place a plug in the fan part meeting the unit. If the unit is suspended the small shaft must be cancelled and a disc must be placed into the seeder unit, the reason for this is to increase the vacuum effect.**



During the conversions you must also consider the seed to be sown. You must use the small coulters at 45 cm distance for small seeds like onion, beetroot and etc. and the large coulters at 70 cm distance for large seeds like beans, sunflower, corn and etc.

5.4 SEEDING MELON, WATERMELON and PUMPKIN SEEDS WITH 5-ROW X 45 CM UNIT AND 6-UNIT X 45 CM UNIT MACHINES

We need to suspend some of the units to complete the gap to 90 cm in seeding melons, watermelons and pumpkins with 5/6-rowx 45 cm-distance machines. To do this, we will suspend the units such as below figure (X) in 6-row machines and the intermediate units such as below figure (X) in 5-unit machines. **Small shafts of the suspended units must be canceled and we must place disc in the seeding unit. Large coulters must be used in seeding these products.**



The important issue while seeding pumpkin seeds is to dismantle the seed flow control cover (1)

If other seeds will be seeded, remember to place the cover. Seeding will be performed by employment of the big coulters

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6.0 MAINTENANCE

You must pay attention to maintenance in order to have a long-lasting machine. Refer to the instructions before proceeding to maintenance operations



- Maintenance periods described in this book are only for guiding and only applies to normal conditions of use. Therefore, these periods are subject to change according to the operating conditions (dust, etc.) and climatic conditions.
- Dust and foreign materials when mixed with grease decrease the quality of lubrication therefore clean the lubricators before placing grease. This cleaning will improve the lubrication quality.



- Keep out grease and normal lubricating oils from the reach of children. Please read carefully the instructions and precautions written on oil and grease boxes and product protection cards. Avoid the contact of these substances with skin.
- Wash the machine with plenty of water after each seeding.
- Pay attention to the environmental conditions regarding the used oil and toxic waste issues.

6.1 MAINTENANCE OF THE NEWPURCHASED MACHINES

Check tightness of all bolts at the end of 8 hours of work.

6.2 MAINTENANCE AT THE BEGINNING OF SEEDING SEASON

Run the seeding machine empty for some time in order to ensure that moisture and foreign substances are discharged out of the hoses.

6.3 POST-OPERATIONAL MAINTENANCE AFTER 8 HOURS OF OPERATION.

- Check all nuts and bolts; tighten the loose connections if any.
- Lubricate all grease nipples
- Clean the seeds and fertilizer hoppers.
- While maintaining the machine, place support elements (wedges, etc.) there under
- Check fan belt tension.

6.4 MAINTENANCE AFTER EVERY 50 HOURS OF OPERATION.

- Please check the condition of the perforated disc. If the mixer pins are bended or broken replace them with the original disc.
- Please check the cover seals. Replace them in case of excessive degree of wear.
- Check whether the springs function or not. Repair or replace faulty parts.

6.5 PARKING THE MACHINE

If you are not going to use your machine till the next season at the end of the season or for a long time due to another reason, we recommend you the following points.

- Wash the machine and especially the fertilizer hopper with plenty of water and grease them with thin oil after they dry.

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Please check carefully whether there are damaged or worn parts of the machine. If necessary replace with new ones. Check the tightness of all bolts and nuts. Check all drive gears and chains and lubricate them with grease. Cover the machine. As a last word, keep the machine in a dry and cool place. If the described conditions are provided, your machine will be completely ready for seeding in the beginning of the season.

6.6 IMPORTANT ISSUES VIS A VIS MAINTENANCE, REPAIR and USE

- Any maintenance and repair concerning the machine save the ones the user is allowed to perform must be reported to the authorized service.
- Chemical cleaners should be avoided during maintenance and repair of the machine against possible corrosion
- The elements of the machine that has to be tightened must not be tightened too strong after the general maintenance and cleaning thereof.
- The machine must not be operated if there are rocks beneath the earth or if the field is stony.

7.0 USAGE FAILORS and TROUBLESHOOTING

1 - Failure: There are no seeds on the seeding discs
Cause: Shaft-tractor connection is not made. Fan bearing is or Aspirator belt is broken
Troubleshooting: Make the shaft - tractor connection Replace belt Aspirator.

2 - Failure: There are no seeds on the seeding disc of one of the seeding units

Cause: The vacuum hose may be punctured, the Teflon seal may be worn out or the unit shaft screw may be detached.

Removal: Replace the vacuum hose.

3 - Failure: There are seeds on the seeding disc but seeding cannot be made

Cause: Motion transmission shaft pin on the seeding unit is broken or the seeding coulter is clogged

Troubleshooting: Place new pin into the shaft. Clean the seeding coulter.

4 - Failure: The seeds do not fall fully and orderly on the seed row.

Cause: .There is insufficient vacuum.

Removal: Increase the vacuum.

5 - Failure: The gaps in turns remain narrow or wide.

Cause: Marker adjustment has failure.

Troubleshooting: Please readjust the Marker.

6 - Failure: There are more than one seed at the same point on the row.

Cause: Adjustment of the scraper is not good

Removal: Re adjust the scraper

7 - Failure: The fertilizer is not released.

Cause: The fertilizer unit movement transmission chain is loose or broken. The hose and the wheels are congested.

Troubleshooting: Tighten or replace the chain. Solve the issue of the hose and wheel congestion.

8 - Failure: There are no seeds on some holes of the seeding disc

Cause: Seeding disc is bent or gaskets are worn.

Removal: Replace the seeding disc and the gasket

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9 - Failure: Track marker controller does not function

Cause: 1.Rope lengths are not equal. 2.Spring is out of order.

Troubleshooting: Equalize the rope lengths.
2.Replace the spring.

10 - Failure: Fertilizer coulter does not dive in the soil

Cause: The adjustment of the land wheel is not good

Troubleshooting: Adjust the land wheel; adjust the height of the fertilizer coulter

11 - Failure: No seeds dropping from one or more seed hopper.

Cause: Scraper teeth are over the hole. Suction hoses may have been displaced. Hoses may have been disrupted.

Removal: 1.Correct the scraper adjustment. Mount hoses and clamp them. Replace hoses.

12 - Failure: Fertilizer is pouring out from hoppers when filling the hopper. **Cause:** Adjustment flaps may be at "emptying position"..

Troubleshooting: Set the flap lever to the "sowing position".

13 - Failure: Seed is pouring out when filling the hopper.

Cause: Emptying flap may have been displaced because of a foreign material.

Troubleshooting: Remove this material and ensure the complete closing of flap.

14 - Failure: The seed wheel is turning while the seeding discs are not turning

Cause: The wheel movement chain or seed transmission gear wheel is displaced

Troubleshooting: Replace the chain or the transmission gear.

15 - Failure: The seed wheel is turning while the fertilizer pouring reels are not turning

Cause: The wheel movement chain or seed transmission gear wheel is displaced

Troubleshooting: Replace the chain or the transmission gear.

16 - Failure: One of the seed plates do not rotate although others function normally.

Cause: One of the seed unit chains may have been disengaged. The unit chains do not transmit movement

Troubleshooting: Check the permanence of seed unit chains and engage them on sprockets.

17 - Failure: After a period of regular sowing, multiple deposits of seeds are released.

Cause: Adjustment of the seed flow control cover must be wrong.

Troubleshooting: Dismantle the seed hopper Mount the partition to lower level.

18- Failure: After a period of regular sowing, seed plates cannot suck seeds anymore.

Cause: The adjustment of the seed flow control cover must be wrong.

Troubleshooting: Remove the seed cell, set the seed flow control cover plate to maximum level.

19 - Failure: Seeding discs hold the seeds and smooth scraping is performed but one or several units do not throw seeds.

Cause: Inasmuch as the machine slipped backwards, the hole at the back of the coulter as a consequence of mud entry into the coulter where the seed has fallen.

Troubleshooting: Remove the seeding units, clean the foreign substances, mud, etc. Do not slip the machine backwards.

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20 - Failure: The seeder disc does not dive in the soil sufficiently.

Cause: The soil surface is hard.

Troubleshooting: Increase the pressure by bringing unit tensile springs to a higher level

7.1 PLEASE CALL THE SERVICE IN FOLLOWING CASES

- Tightness in rotation of the pulley axle.
- Fan belt is worn out very quickly.
- Fan bed is overheating.
- Fan is running too loud.
- Seed land wheel rotating hardly or does not rotate at all.
- The chain of the seed or fertilizer land wheel is disengaged.
- Please call for service if the problem cannot be solved after following the proposed rectification process in the usage and troubleshooting section as much as possible.

8.0 SERVICE AND SPARE PARTS

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