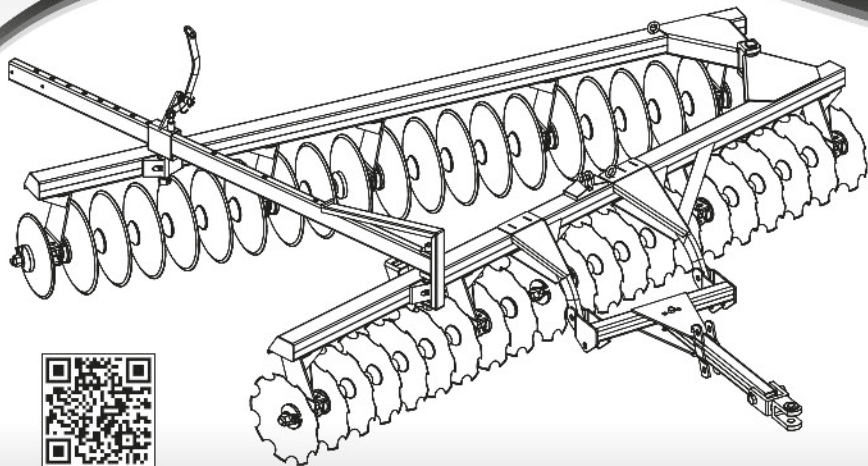


SP

Drag Type Offset Leveling Disc Harrow



www.baldan.com.br

Instruction Manual

INTRODUCTION

We thank you for the preference and congratulate your excellent choice in acquiring an implement of outstanding quality, manufactured in accordance with the advanced technology of **BALDAN IMPLEMENTOS AGRÍCOLAS S/A.**

This manual will assist you, in proceeds necessities, since when you bought until the operational proceeds application, security and maintenance.

The **BALDAN** guarantees that deliver this implement to the dealer, working properly, and in perfect conditions.

The dealers it's under the responsibility to keep the protection and conservation while keep the implement in your stock, and than, to assembly, tighten, lubrication and overhaul.

On time of the technical deliver, the dealer must to have conducted the user customer about the manutentation, safety, and your obligations in a possible technical assistance, the obligation to see the warranty terms and read the instruction manual. Any solicitation of warranty, please contact our Baldan technical service, by your Baldan dealer that you bought our implement.

Reaffirm the necessity to read carefully of warranty certificate and note all of items from this manual, therefore you will increase the working life of your equipment.



Instruction Manual



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01. SAFETY RULES

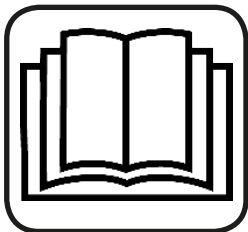


THIS ALERT SYMBOL INDICATES IMPORTANT SAFETY NOTES. WHENEVER YOU FIND IT IN THIS MANUAL, READ THE MESSAGE WITH ATTENTION TO AVOID ANY ACCIDENT.



WARNING

- *Read this instruction manual carefully to know the recommended safety rules.*



WARNING

- *Only start the tractor operations, when are you properly accommodated and with the seat belt fasted.*



WARNING

- *Never carry people over the tractor or equipment.*





WARNING

- *There are risks of serious injury by tipping when working on slopes*
- *Never use excessive speed.*



WARNING

- *Before any equipment maintenance, make sure that is properly stopped*
- *Avoid getting hit*



WARNING

- *Keep always away from the machine's active elements (discs), they are sharp and can cause accidents.*
- *When carrying out any service on the discs, use safety gloves on his hands.*



ALCOHOL AND DRUGS MAY GENERATE LOSS OF REFLEX AND CHANGING OF OPERATOR FISICAL CONDITIONS. SO DO NOT WORK WITH THIS EQUIPMENT, IN USE OF THIS SUBSTANCE.



WARNING

The incorrect handling of the tractor engine can result in serious or fatal accidents. Before using the read carefully the instructions in this manual. Be sure that the person responsible for the operation is instructed about the correct handling and safety and has read and understood the instruction manual concerning this machine.

- 01-  When operating the implement do not allow people to stand close or on the implement.
- 02-  During assembly or disassembly of the discs section use protective gloves.
- 03-  When coupling or uncoupling the hydraulic hose relieve the hydraulic circuit pressure.
- 04-  Check out periodically the hoses condition. Where there is oil emptying change it immediately because the oil works under high pressure and may cause serious damage.
- 05-  Do not use large or daggy clothes because they can get caught on the implement.
- 06-  When you start the tractor engine, be correctly placed at the operator seat and be aware of the correct and safety handling of both tractor and implement. Always place the gearshift crank at the neutral position, turn off the gear of the power command and place the hydraulic commands at the neutral position.
- 07-  Do not turn on the tractor in a closed place without appropriate ventilation because the fumes from the fuel are is bad for health.

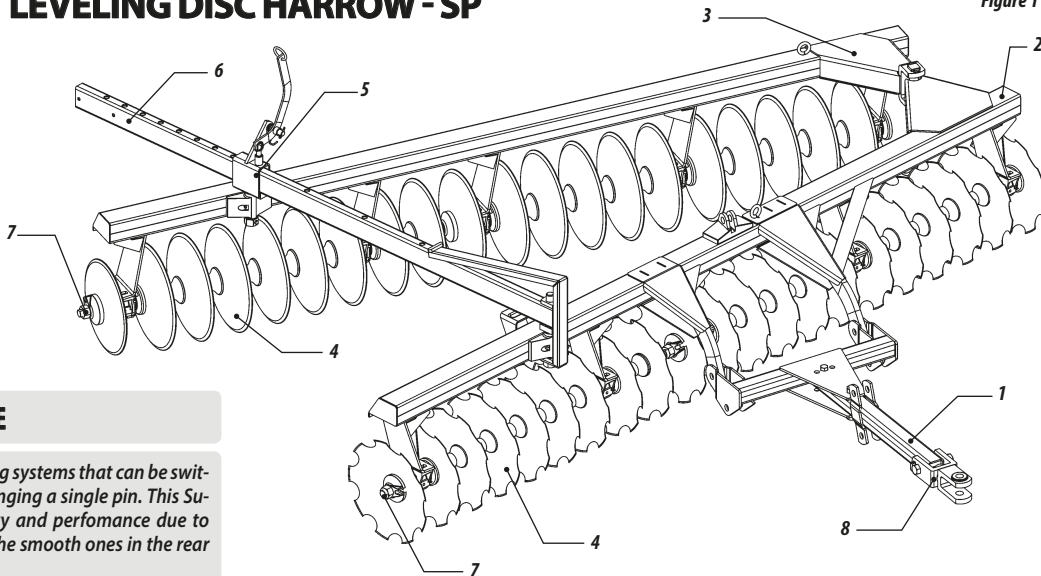
- 08- **⚠** While maneuvering the tractor to clamp the implement be sure that there is enough space and nobody is too close, maneuver always in slow gear and be ready to brake in case of emergency.
- 09- **⚠** Do not carry out adjustments with the implement working.
- 10- **⚠** When working over hilly areas try to keep the necessary stability. In case of instability reduce the acceleration, turn the wheels to the inclined side of the land and never lift the implement.
- 11- **⚠** Always use the tractor at safe speeds, especially when working in irregular or inclined areas, make sure the tractor is always in gear.
- 12- **⚠** When using the tractor on the road, keep the brake pedal connected.
- 13- **⚠** Do not work with the front tractor light. If there is a tendency to lift up add more weight in the front of the tractor at the front wheels.
- 14- **⚠** When leaving the tractor, place the gearshift at the neutral position and apply the park brake. Never let clamped implements be hitched to the tractor with the hydraulic system at the lifted position.
- 15- **⚠** Drugs and alcohol will affect an operator's alertness and coordination. Do not operate any engine under these conditions.
- 16- **⚠** Explain the operation, inspection and maintenance instructions to those users or operators who can not read.

DRAG TYPE OFFSET LEVELING DISC HARROW - SP

Figure 1

02. COMPONENTS

- 01 - Hitch Beam
- 02 - Front Frame
- 03 - Rear Frame
- 04 - Discs
- 05 - Lock Puller
- 06 - Lock Adjustments
- 07 - Disc Cubes
- 08 - Transport Adjustment Arm



NOTE

The Super Harrow Disc has two hitching systems that can be switched from trailing to hydraulic by changing a single pin. This Super Harrow Disc has a great efficiency and performance due to its cutting discs in the front part and the smooth ones in the rear part making the plantation easy.

03. TECHNICAL SPECIFICATIONS

Table 1

Model	Nr of Discs	Disc Spacing (mm)	Disc Diameter (ø)	Axle Diameter (ø)	Working Width (mm)	Working Depth (mm)	Approx. Weight (Kg)			Required tractor power (HP)
							18"	20"	22"	
SP	20	175	18" - 20" - 22"	1.1/4"	1700	50 - 150	470	500	543	46 - 51
SP	24	175	18" - 20" - 22"	1.1/4"	2100	50 - 150	540	575	625	55 - 61
SP	28	175	18" - 20" - 22"	1.1/4"	2350	50 - 150	590	630	690	65 - 70
SP	32	175	18" - 20" - 22"	1.1/4"	2700	50 - 150	670	720	789	73 - 80
SP	36	175	18" - 20" - 22"	1.1/4"	3000	50 - 150	710	765	843	85 - 90
SP	42	175	18" - 20" - 22"	1.1/4"	3600	50 - 150	810	870	961	95 - 105
SP	20	200	18" - 20" - 22"	1.1/4"	1900	50 - 150	530	566	612	51 - 55
SP	24	200	18" - 20" - 22"	1.1/4"	2300	50 - 150	587	630	685	61 - 65
SP	28	200	18" - 20" - 22"	1.1/4"	2700	50 - 150	682	733	797	70 - 75
SP	32	200	18" - 20" - 22"	1.1/4"	3100	50 - 150	760	818	891	80 - 85
SP	36	200	18" - 20" - 22"	1.1/4"	3500	50 - 150	842	907	989	90 - 100

*The Baldan reserves the right to change technical specifications of this product without previous notice.
The technical specifications are approximate and informed under normal working conditions.*

04. MONTAJE

Figure 2

01 - Check if all the components listed are in the box.

02 - Before starting the assembly, put on the gloves.

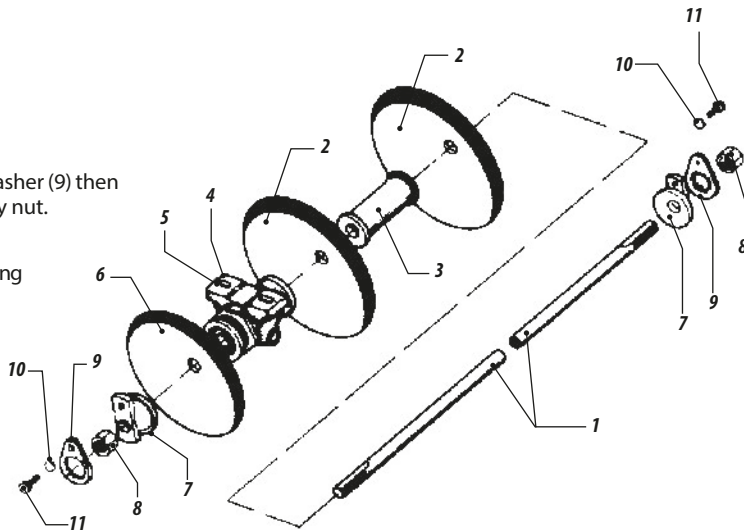
03 - The assembly should start with the disc set.

04 - Connect the axle (1), a disc strut washer (7), the nut (8), a lock washer (9) then lock with a fastener (10). Check that the axle is faced with the key nut.

05 - Connect the axle (1) in a vertical position with the axle fixing pin facing downwards, connect one disc (2) facing upwards and a convex strut washer (6), a spool (5), a concave strut washer (4), another disc, a spacer (3) repeating the procedure up to final assembly.

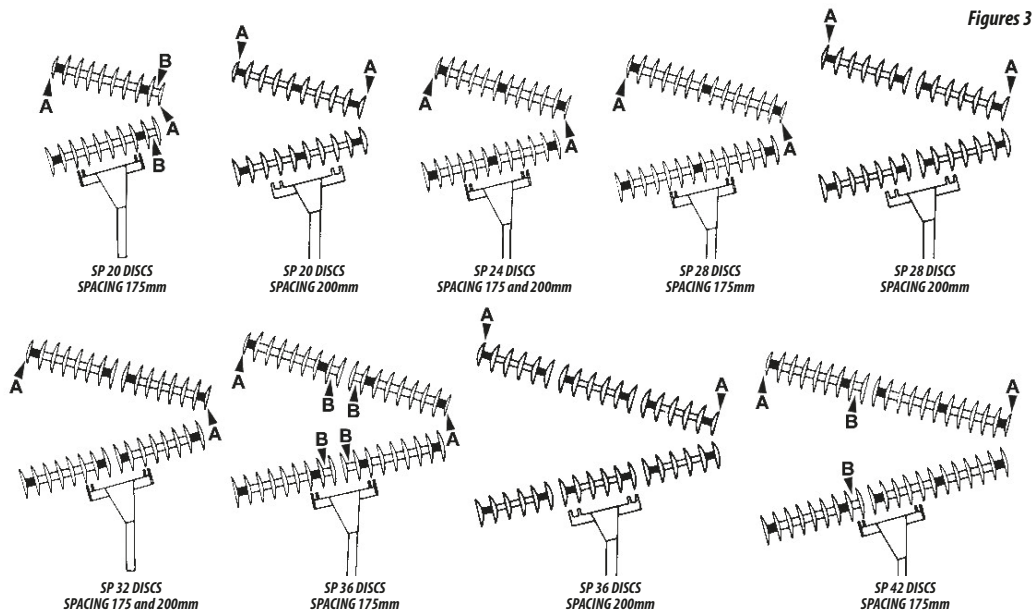
06 - Next, underset the disc sets firmly, and tighten all the nuts (11).

07 - When assembling the roller bearings, they should be mounted with the lubrication system (fat or oil) facing to the rear part of the implement, according to figure 02.



08 - Check figures 3 which shows the assembly of the discs sections to each grade model.

09 - Watch that the front disc section must stay on the opposite side of the rear section.



10 - Observe in the assembly of frames that the fixing bracket of the bearing (shoe) should face the concavity of the disc, as shown in figures 4 and 5.

JOIN OF FRONT AND REAR FRAMES

11 - Coupling the front frame section 1, the frame section 2 via the coupling pin item 3 and washer, locking it with the cotter pin.

Figure 4

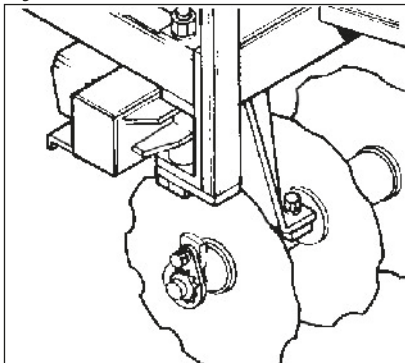
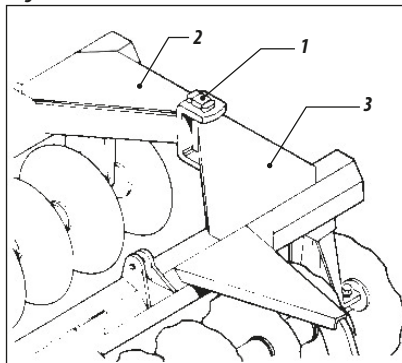
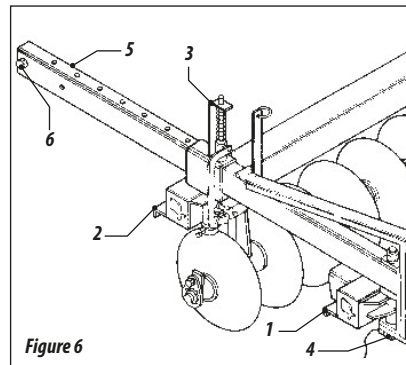


Figure 5



ASSEMBLY OF REGULATION OPENING SET OF DISC HARROW

12 - Place the rear frame item 2, item 3 handle lock, locking it with the cotter pin, move the ruler lock adjustment item 5, the interior of the handle lock body, linking it to the front section of Item 1 through the screw (4) and, finally, put the locking screw item 6 of the ruler.



HEAD OF HITCH ASSEMBLY

- 13 - Attaching the header item 1 in item front frame 2 by means of screw item 3.
- 14 - Note the words "THIS SIDE UP".
- 15 - Review the harrow, tighten all screws, nuts and axles, check the operation of the parts, handle lock, header, etc.. Clean grease fittings and shines them.
- 16 - Fix the wipers item 1, Figure 7, on the frames and leave a gap of 10mm between the wiper and the disc.

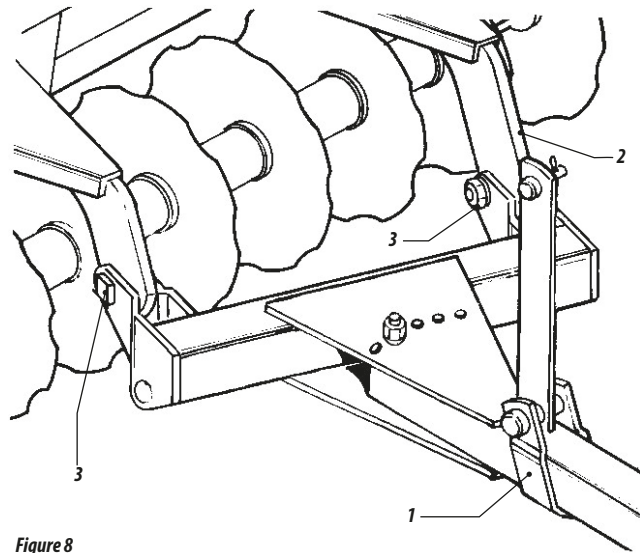
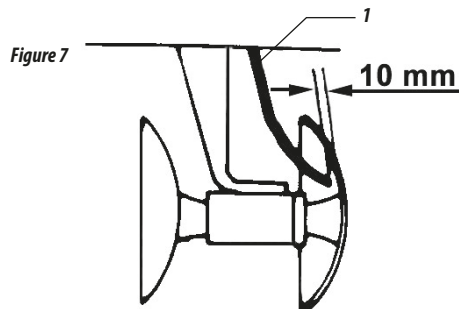


Figure 8

05. HITCHING TO THE TRACTOR

HITCH THE HARROW ON THE TRACTOR HYDRAULIC FOR TRANSPORT OR OPERATION

- 01 - To engage the harrow in the tractor hydraulic lift the header item 2, in the front frame and lock with the pin item 3.
- 02 - Engage the lower left arm of the tractor hitch pin grid as "A", figure 9.
- 03 - Engage 3rd point tractor hitch plate in the header, as the letter "B", Figure 9.
- 04 - Finally, with the help of lever height of the tractor hitch pin on the lower right arm tractor, as the letter "C", Figure 9.

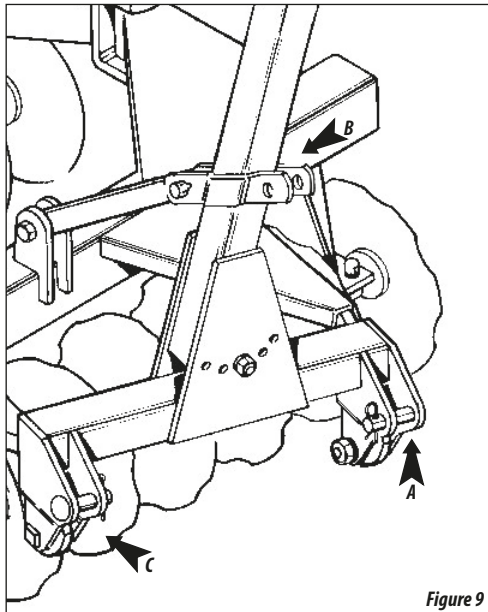


Figure 9

06. HITCHING TO THE TRACTOR DRAWBAR

- 01 - To hitch the harrow on the drawbar of the tractor, must check the alignment, adjust the exact height of the hitch of the harrow, use the L coupling pin and cotter pin it as shown in Figure 10.
- 02 - To hitch the harrow, find a safe place and easily accessible, always use low gear at low speed.

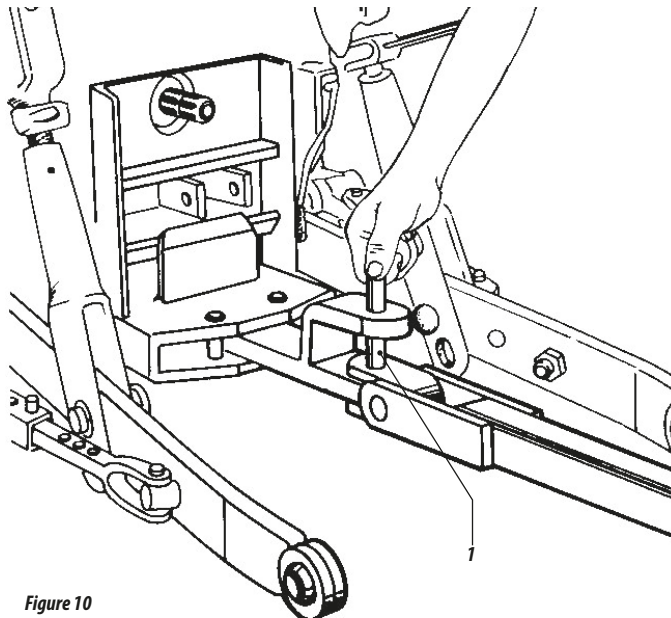


Figure 10

07. ADJUSTMENTS AND OPERATIONS

DISC HARROW GANGS ADJUSTMENTS

- 01 - The following adjustments can be made for a better disk blade penetration. In certain soil conditions, less penetration on gangs may occur, to avoid it adjust the angle of the disc.
 - For hard ground conditions, or when more penetration is desired increase the angling of the discs as illustrated on the figure 12.
 - For normal ground conditions decrease the angling for disking.
- 02 - To increase or decrease the angle of the disc remove the bolts from the frame and adjust to the desired position.
- 03 - The ground wheel helps on the depth control.

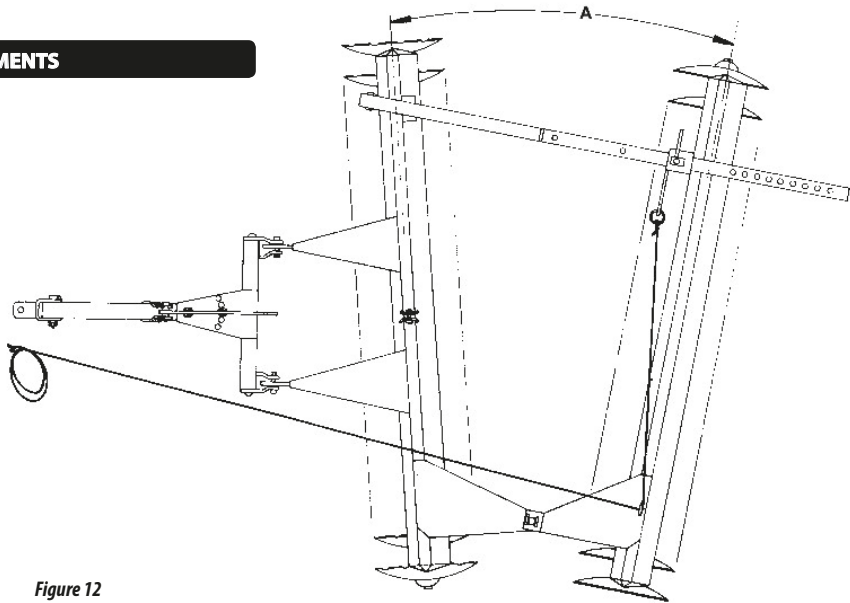


Figure 12

DISPLACEMENT ADJUSTMENT

- 04 - This lateral displacement is used to center the harrow behind the tractor, normally when working in unlevelled areas.
- 05 - The hitch beam also has a regulation system to change the discs penetration.

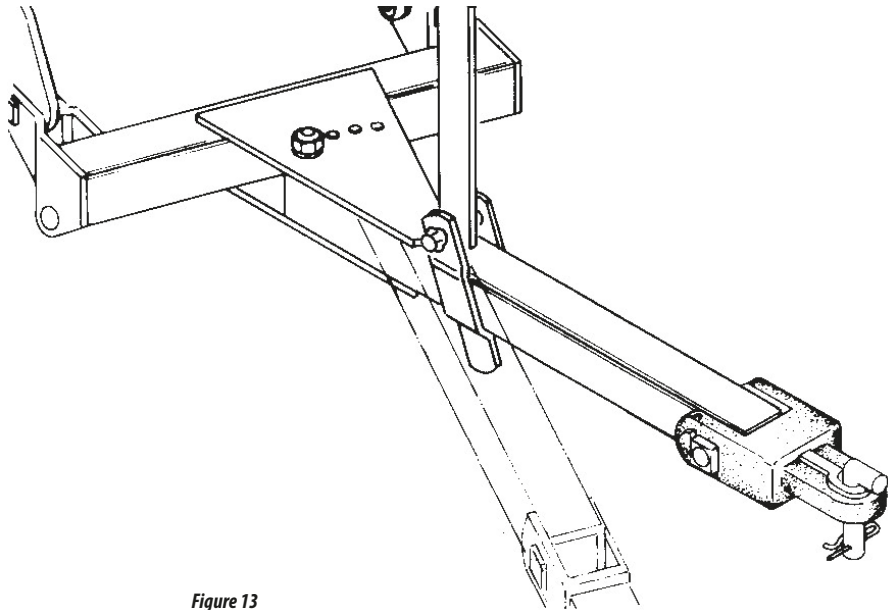


Figure 13

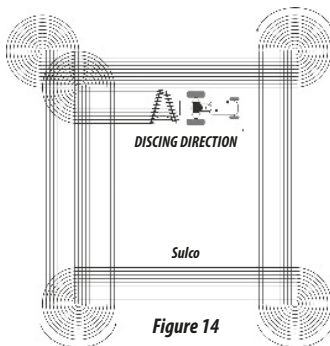
08. OPERATIONS

01 - Before the beginning of the season use clean off any dirt or grease that may have accumulated on moving parts. This will prevent abrasive action that could cause excessive wear, thoroughly inspect the disk for loose parts and adjust as necessary.

HOW TO START THE DISC

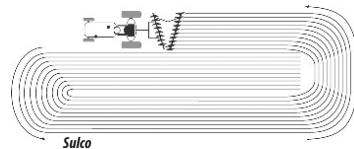
- 02 - Before starting the disc be sure that the harrow is following the contour plowing in order to it stay in left side of the tractor.
- 03 - Do not turn to the right side, as illustrated on drawing 16, the disking area must be in the left side of the tractor.
- 04 - The next drawing show some operations.

DISC FROM OUTSIDE TO INSIDE



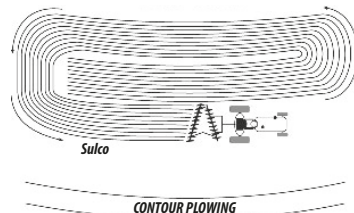
DISC FROM INSIDE TO OUTSIDE

05 - In this direction obtain more accurate disking, when you are working on the edge you should start a new block.



WORKING IN TERRAIN WITH CONTOUR PLOWING

06 - In terrain with contour plowing you should start two blocks each time, be sure that the contour is located on the left side of tractor. When you arrive on half the block you should start a new block to save fuel.



09. MAINTENANCE

LUBRIFICATION

- 01 - The correct lubrication is very important for providing a high durability and good working of the rotating parts of the engine which will result in years of trouble-free from the disc harrow.
- 02 - Before running the engine, lubricate all-grease nipples in accordance with the schedule on the next pages. Use good quality lubrication recommended by the manufacturers.

LUBRIFICATION OF GREASE BEARING

- 03 - Clean all grease nipple and when it is replace damaged.
- 04 - The amount of grease of each bearing is 150 grams.
- 05 - The grease bearing must lubricated every 12 working hours in accordance with the table below.

LUBRIFICATION OF OIL BATH BEARING

- 06 - When you start to use the harrow check the oil level and rings from the bearing daily.
- 07 - After several weeks inspect the oil level every 120 working hours.
- 08 - Replace the oil every 1200 working hours. Use oil SAE 90.

TABLE OF EQUIVALENT AND GREASES

<i>Manufacturer</i>	<i>Grease Type</i>
<i>Petrobrás</i>	<i>Lubrax GMA 2</i>
<i>Atlantic</i>	<i>Litholine MP 2</i>
<i>Ipiranga</i>	<i>Super Grasa Ipiranga Ipiranga Super Grasa 2 Ipiflex 2</i>
<i>Castrol</i>	<i>LM 2</i>
<i>Mobil</i>	<i>Mobilgrease MP 77</i>
<i>Texaco</i>	<i>Marfak 2 Agrotex 2</i>
<i>Shell</i>	<i>Retinax A Alvania EP 2</i>
<i>Esso</i>	<i>Multipurpose grease H</i>
<i>Bardahl</i>	<i>Maxlub APG 2 EP</i>

Table 2

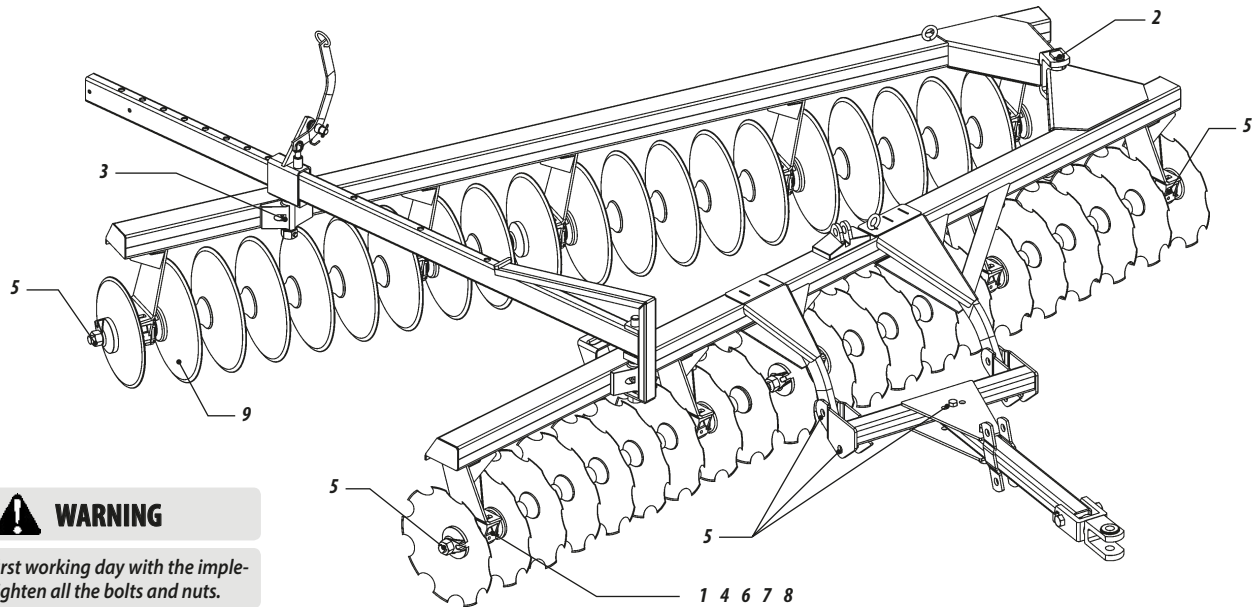


If there were other manufacturers or and other. Equivalent trends that are not listed in this. Table, consult the manufacturer's technical manual.

10. PUNTOS DE LUBRICACIÓN

Table 3

Item	Part Name	Number of grease nipples						Oil Replacement	Lubricate With Grease	Re-Tighten	Replace	Inspect	Maintenance
		SP - 20 discs espac. 175 SP - 20 discs espac. 200	SP - 24 discs espac. 175 SP - 24 discs espac. 200	SP - 28 discs espac. 175 SP - 28 discs espac. 200	SP - 32 discs espac. 175 SP - 32 discs espac. 200	SP - 36 discs espac. 175 SP - 36 discs espac. 200	SP - 42 discs espac. 175						
1	Bearing	4/6	6	6/8	8	8/12	10		X				12 working hour
2	The Union of frames	1	1	1	1	1	1		X				
3	Chuck latch adjustment	1	1	1	1	1	1		X				
4	Oil from the Bearing											X	120 working hour
5	Nuts, Bolts, Pin									X			
6	Bearing							X					1200 working hour
7	Retains										X		1500 working hour
8	Bearing										X		
9	Discs										X		When Necessary



WARNING

After the first working day with the implement, re-tighten all the bolts and nuts.

11. BEARING ADJUSTMENTS

- When the bearings present looseness, adjust them on the following way:

- 01 - Take the washer out item 1 figure 18.
- 02 - Release the bolts item 2 and take the lid item 3 out.
- 03 - Take the joints 1 or 2 item 4, out of the lid bearing. Put it again and tighten it.
- 04 - If the looseness is still, turn the lid item 3, to increase the adjustment after assemble the lid on the bearing with as many joints as it is necessary.
- 05 - The bearing should turn freely, that is, without radial and axial looseness.

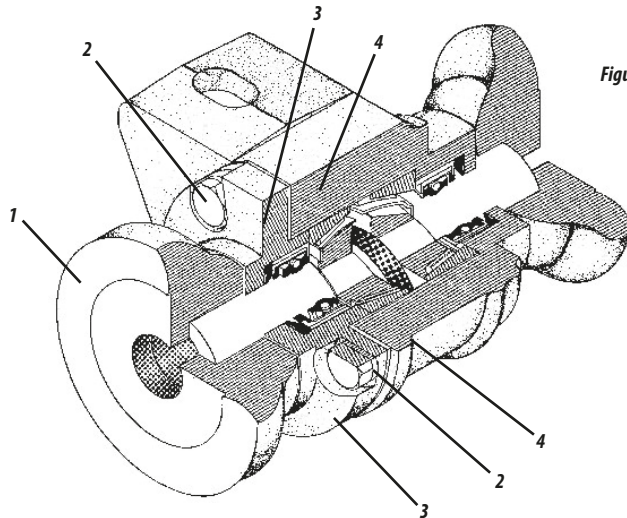


Figure 12

12. CLEANING

- 01 - When the grade remains inactive for a long period, make a general cleaning, check if the painting didn't get spoiled. If it happened, pass a protecting oil and lubricate it totally. Check the discs, repaint them and pass a protecting oil on them.



NOTE

Don't assemble the bearing without a joint.

13. HOURLY PRODUCTION OF THE CRI / CRSG

01 - To calculate daily production of the CRI / CRSG level harrow, use the following formula:

$$A = \frac{L \times V \times F}{X}$$

FORMULA DATA:

A = Area to be worked

L = Cutting width (meters)

V = Average tractor (meters)

F = Work hours

X = Number of hectares (10.000 m²)

Ex.: A harrow with 36 discs, how many hectares can it harrow in one hour at an average speed of 7 km per hour.

A = ?

L = 3,00m

V = 7.000m/h

F = 0,90

X = 10.000m²

$$\frac{A = 3,00 \times 7.000 \times 0,9}{10.000} = 1,89 \text{ Ha/h}$$

APPROXIMATE HOURLY PRODUCTION TABLE

Model	Spacing	Working Width (m)	Average Speed (m/h)	Working Hours	Approximate Production
					Hectares
SP - 20	175	1,70	7.000	0,90	1,07
SP - 20	200	1,90	7.000	0,90	1,20
SP - 24	175	2,00	7.000	0,90	1,26
SP - 24	200	2,30	7.000	0,90	1,45
SP - 28	175	2,33	7.000	0,90	1,48
SP - 28	200	2,70	7.000	0,90	1,70
SP - 32	175	2,70	7.000	0,90	1,70
SP - 32	200	3,10	7.000	0,90	1,95
SP - 36	175	3,00	7.000	0,90	1,89
SP - 36	200	3,50	7.000	0,90	2,20
SP - 42	175	3,60	7.000	0,90	2,26

Table 4

02 - The formula to calculate the approximate production refers to the work area performed by the harrow.

03 - If it is wished to know many hours it will take to harrow a known area, just divide the area by the hourly production of the equipment.

04 - *Example: What is the time (X) necessary for a harrow with 24 discs to prepare 35 hectares at a medium tractor speed of 7 km/hour?*

$$X = \frac{35 \text{ Ha}}{1,89 \text{ Ha/h}} = 19 \text{ hours approximately}$$

05 - Daily production varies with the pace of work such as moist or dry soils, topography, inadequate machine adjustments etc. These factors are not considered in the table which are based on normal working conditions.



14. IDENTIFICATION

01 - In order to refer parts catalogues or apply technical support from Baldan, always indicate model (1), serial number (2), manufacture date (3) located on the identification tag.

ALWAYS REQUIRE BALDAN ORIGINAL PARTS

- Look in your local, a reseller BALDAN, he will have in stock genuine parts.

BIA Baldan
BALDAN IMPLEMENTOS AGRÍCOLAS S/A.
AV. BALDAN, 1500 | CEP 15.993-000 | MATÃO-SP | BRASIL
FONE: (0xx16) 3221-6500 | FAX: (0xx16) 3382-6500
e-mail: sac@baldan.com.br | Home Page: www.baldan.com.br
CNPJ: 52.311.347/0009-06 | INSCR. EST.: 441.016.953.110

1 Modelo	
2 Nº de Série	3 Data



MARKETING
Edition of
Catalogs and Manuals

Code: 6055020130-8
Revision: 01
CPT: SP06815



WARNING

The draws contained in this instruction manual are merely illustrative.



CONTACT

*In case of doubt **do not** operate the equipment, please contact our **After-sales Service**.
Phone: 08000-152577
e-mail: export@baldan.com.br*

PRODUCT IDENTIFICATION

- Do the identification below to always have the properly informations about your equipment life time.

Owner: _____

Dealer: _____

Farm: _____

City: _____ Country: _____

Model: _____

Warranty certified number: _____

Serial number: _____

Purchase date: _____ / _____ / _____

NOTE:

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There are no margins, text, or other markings on the paper.

Opis. Nr: _____



CERTIFICATE OF GUARANTEE

BALDAN IMPLEMENTOS AGRÍCOLAS S/A, guarantee the normal operation of the product for a 6 (six) months period dated from the dealers's bill of sale to the first final customer.

During this period, Baldan compromise itself to repair the material or manufacturing defects, but the labour, the freight and other expenses are the dealer's responsibility.

At the guarantee period, all the request and replacement of any defective part must be made to the dealer of the region, which will send the defective part for analysis at Baldan.

When this procedure won't be possible and the dealer couldn't have the ability to solve the problem, the dealer can ask for Baldan's Technical Assistance using the specific form delivered to them.

After the analysis of the items replaced by Baldan Technical Assistance and if we conclude that it wasn't a guarantee problem, then the dealer will be the responsible for all costs related to the replacement; as well as material expenses, travel including accommodation and meals, also the accessories, lubricant used or any other expenses after having called the Technical Assistance. And, withal, the company Baldan is authorized to issue the billing in name of the respective reseller.

Any repair made to the product which is in warranty period by the dealer, will only be authorized by Baldan after budget previous presentation describing pieces and labour to be accomplished.

It is out of this term the product which has repairs or modifications not made by dealers from Baldan's network, as well as pieces applications or not authentic components to the product by the user.

This certificate of guarantee will become invalid when notice that the damage or defect is the result of incorrect use of the product, of instructions non-observance or operator's inexperience.

It's stipulated that this guarantee doesn't cover tires, polyethylene deposits, universal joints, hydraulic components, etc, which equipments are guaranteed by their manufacturers.

The material or manufacture defects, object of this certificate of guarantee, will not be, by any hypothesis, reason for cancellation of the contract of sale, or indemnity of any kind.

For a warranty solicitation to the distributor, you have to proceed in the following manner:

Send the technical informe detailed telling the problem (technical assistance request form to the client), you can find it send us an email to aftersales@baldan.com.br or accessing our website.

If it's possible send films and photos from the requested spare parts.

To point at the form: serial number, manufacture year, etc, that is, all information asked at the form. The damage spare parts should be available for analysis of the the after sales department in a future visit (in case of requested).

Baldan keeps the right of changing and or improve the technical characteristics of its products, without notice and without the obligation of act like this way with its previously manufactured products.

CERTIFICATE OF INSPECTION AND DELIVERY

SERVICE BEFORE THE DELIVERY: This equipment was very carefully prepared by the dealer's organization, inspected in all its parts in agreement with the manufacture's prescription.

DELIVERY SERVICE: The user was informed about the current guarantee terms and instructed about maintenance care and utilization.

I confirm that I was informed about the current guarantee terms and instructed about the correct utilization and maintenance of this product.

Product: _____ *Serial Number:* _____

Date: _____ *Bill of sale:* _____ *Store:* _____

City: _____ *State:* _____ *Zip code:* _____

Owner: _____ *Phone:* _____

Address: _____ *Number:* _____

City: _____ *State:* _____

E-mail: _____ *Date of sale:* _____

1st Page - Owner

Signature / Store's stamp _____

CERTIFICATE OF INSPECTION AND DELIVERY

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DELIVERY SERVICE: The user was informed about the current guarantee terms and instructed about maintenance care and utilization.

I confirm that I was informed about the current guarantee terms and instructed about the correct utilization and maintenance of this product.

Product: _____ *Serial Number:* _____

Date: _____ *Bill of sale:* _____ *Store:* _____

City: _____ *State:* _____ *Zip code:* _____

Owner: _____ *Phone:* _____

Address: _____ *Number:* _____

City: _____ *State:* _____

E-mail: _____ *Date of sale:* _____

2nd Page - Store

Signature / Store's stamp _____

CERTIFICATE OF INSPECTION AND DELIVERY

SERVICE BEFORE THE DELIVERY: This equipment was very carefully prepared by the dealer's organization, inspected in all its parts in agreement with the manufacture's prescription.

DELIVERY SERVICE: The user was informed about the current guarantee terms and instructed about maintenance care and utilization.

I confirm that I was informed about the current guarantee terms and instructed about the correct utilization and maintenance of this product.

Product: _____ *Serial Number:* _____

Date: _____ *Bill of sale:* _____ *Store:* _____

City: _____ *State:* _____ *Zip code:* _____

Owner: _____ *Phone:* _____

Address: _____ *Number:* _____

City: _____ *State:* _____

E-mail: _____ *Date of sale:* _____

3rd Page - Manufacturer

Signature / Store's stamp _____



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Baldan



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