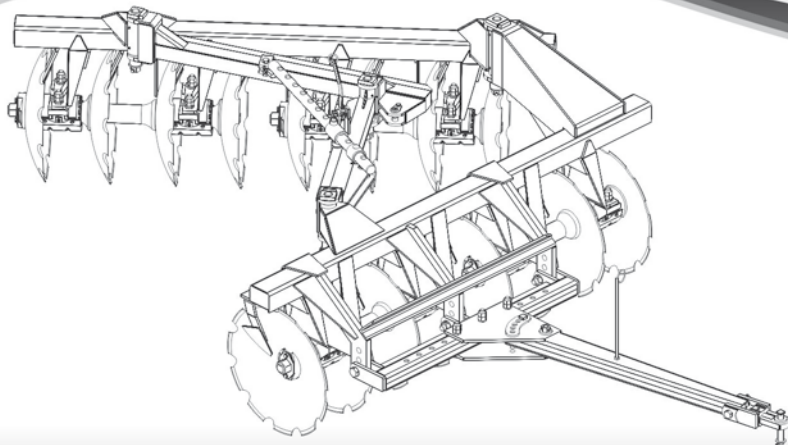


# GSPA

• **Super Heavy Drag Disc Harrow**



[www.baldan.com.br](http://www.baldan.com.br)

**Instruction Manual**



# INTRODUCTION

**W**e 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***



## INDEX

01. Safety standards .....	4
02. Components .....	9
03. Technical specifications .....	10
04. Assembly .....	11
<i>Union of rear and front frames .....</i>	<i>13</i>
<i>Assembling the hydraulic piston (optional) .....</i>	<i>13</i>
<i>Assembling the coupling header .....</i>	<i>14</i>
<i>Assembling the wipers .....</i>	<i>14</i>
05. Coupling the disc harrow to the tractor drawbar .....	15
06. Adjustments and operations.....	15
<i>Adjusting the disc harrow opening.....</i>	<i>15</i>
<i>Side displacement of the disc harrow .....</i>	<i>16</i>
<i>Adjusting the cross bar on the front frame .....</i>	<i>17</i>
07. Operacções .....	18
08. Lubrication .....	19
<i>Table greases and equivalents.....</i>	<i>19</i>
09. Lubrication points .....	20
10. Cleaning.....	22
<i>Adjustment of bearings .....</i>	<i>22</i>
11. Approximate produccion .....	23
12. Table of approximate production .....	24
13. Identification .....	25
14. Anotaciones:.....	27

## 01. SAFETY STANDARDS

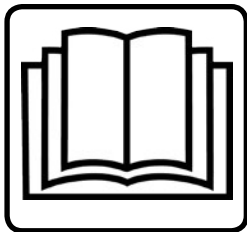


THIS SYMBOL INDICATES IMPORTANT SAFETY WARNING. WHENEVER YOU FIND IT IN THIS HANDBOOK, CAREFULLY READ THE MESSAGE THAT FOLLOWS AND BE AWARE OF THE POSSIBILITY OF PERSONAL INJURY.



### ATTENTION

- *Read the instruction manual carefully, so you can learn the recommended safety practices.*



### ATTENTION

- *Only start operating the tractor when properly seated and with the safety belt fastened.*



### ATTENTION

- *Do not transport people on the tractor and not in or on the equipment.*



## **ATTENTION**

- *Do not operate the tractor if the front is light. With a tendency to rise, add weights on the front of the tractor or front wheels.*



## **ATTENTION**

- *There are risks of serious injury by tumbling when working on slopes.*
- *Do not use excessive speed.*



## **ATTENTION**

- *Before performing any maintenance on your equipment, make sure it is turned off. Avoid getting hit.*



**ALCOHOL OR DRUGS CAN GENERATE SOME LOSS OF REFLEXES AND CHANGE THE PHYSICAL CONDITIONS OF THE OPERATOR, SO, NEVER OPERATE THIS EQUIPMENT UNDER USE OF THESE SUBSTANCES.**

## **ATTENTION**

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



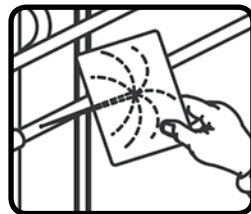
## **ATTENTION**

- *The hydraulic system operate with a high pressure fluid, existing risk of serious injuries or death, search for damaged hose every day and replace it.*
- *Before coupling or uncouple the hoses relief the pressure, using the tractor's control when it is turned off.*



## **ATTENTION**









- *When searching for a possible leak on the hoses, use a piece of cardboard or wood and never use your hands.*
- *Avoid the incision of fluid on the skin.*







*THE MISMANAGEMENT OF THIS EQUIPMENT CAN RESULT IN SERIOUS OR FATAL ACCIDENTS. BEFORE PLACING THE EQUIPMENT IN OPERATION, CAREFULLY READ THE INSTRUCTIONS IN THIS HANDBOOK. MAKE SURE THAT THE PERSON RESPONSIBLE FOR THE OPERATION IS INSTRUCTED ON THE PROPER AND SAFE HANDLING, IF HE HAS READ AND UNDERSTOOD THE HANDBOOK OF THIS PRODUCT.*

- 01-  When operating the equipment, do not allow people to stay very close or on it.
- 02-  In making any assembling and disassembling service in the discs, always use safety gloves.
- 03-  Before connecting or Disconnecting hydraulic hoses, relieve the system pressure by moving the command with the tractor off.
- 04-  Periodically check the conservation status of the hoses. If there is evidence of leaks, immediately replace them because the oil works under high pressure and can cause serious injury.
- 05-  Do not wear loose clothing as they can become entangled in moving parts.
- 06-  When turning the tractor engine on, be properly seated on the operator's seat and aware of the correct and safe management of both tractor and implement. Always put the selector lever in neutral, turn off the power take-off command and place the hydraulic commands in the neutral position.
- 07-  Do not run the engine in indoor environments without adequate ventilation, as the exhaust fumes are harmful to health.
- 08-  When maneuvering the tractor to the implement hitch, make sure that there is plenty of room and that there is nobody very close, always do the maneuvers in low gear and be prepared to brake in emergency situations.

- 09- **⚠ Do not make adjustments with the implement in operation.**
- 10- **⚠ When working on slopes, proceed with caution when trying to maintain the necessary stability. In case of unbalance, reduce the throttle and turn the wheels of the tractor to the side of the slope.**
- 11- **⚠ Always drive the tractor at speeds compatible with safety, especially when working on uneven ground or slopes. Keep the tractor always engaged.**
- 12- **⚠ When driving on roads, keep the tractor brake pedals interconnected and use safety signs.**
- 13- **⚠ Do not operate the tractor if the front is light. If there is a tendency to rise, add weights on the front or front wheels.**
- 14- **⚠ Leaving the tractor, put the shifter in neutral and apply the parking brake.**
- 15- **⚠ Alcoholic beverages and some medications can cause loss of reflexes and change the physical conditions of the operator. Therefore, never operate this equipment, under the influence of these substances.**
- 16- **⚠ Read or explain all the procedures above to the operator who cannot read.**



# GSPA - SUPER HEAVY DRAG DISC HARROW

## 02. COMPONENTS

- 01 - Front Frame
- 02 - Rear Frame
- 03 - Front stabilizer bar
- 04 - Rear stabilizer bar
- 05 - Complete lock handle
- 06 - Adjustment lock
- 07 - Disc
- 08 - Crossbar
- 09 - Coupling header
- 10 - Hose support
- 11 - Coupling shackle

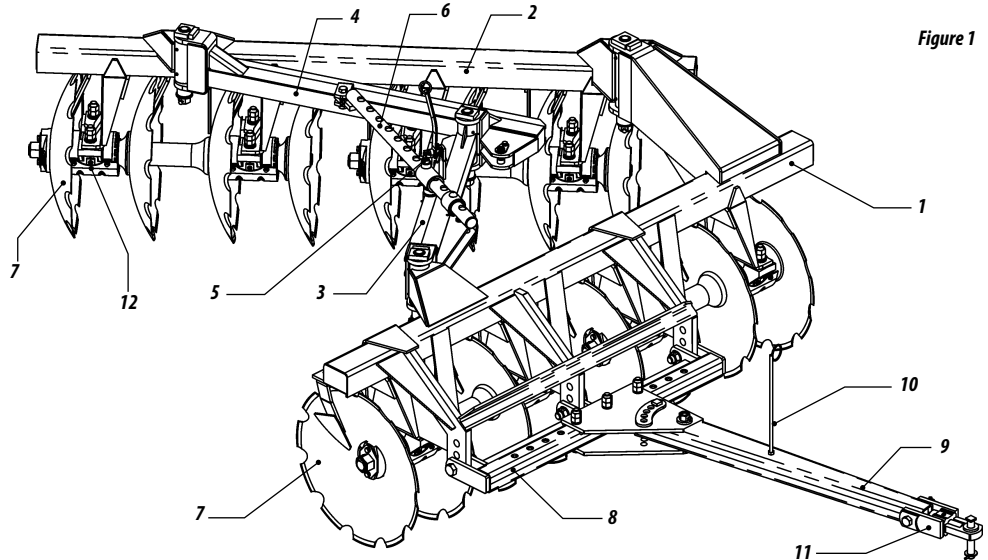


Figure 1

### 03. TECHNICAL SPECIFICATIONS

Table 1

Model	Nr de Discs	Espaciamiento entre Discs (mm)	Diámetro de los Discs (ø)	Discs Cóncavos (mm)	Diámetro del eje (ø)	Ancho de Trabajo (mm)	Profundidad de Trabajo (mm)	Peso Aproximado (Kg)			Potencia del Tractor (HP) (Neumáticos)	Potencia del Tractor (HP) (Oruga)
								32"	34"	36"		
<b>GSPA</b>	10	430	32" - 34" - 36"	9.0 e 12.0	2.1/2"	1900	200 - 300	2680	2726	2784	110 - 130	73 - 80
<b>GSPA</b>	12	430	32" - 34" - 36"	9.0 e 12.0	2.1/2"	2350	200 - 300	2912	3002	3070	125 - 156	90 - 96
<b>GSPA</b>	14	430	32" - 34" - 36"	9.0 e 12.0	2.1/2"	2800	200 - 300	3330	3400	3450	145 - 182	100 - 112
<b>GSPA</b>	16	430	32" - 34" - 36"	9.0 e 12.0	2.1/2"	3200	200 - 300	3760	3740	3900	170 - 208	120 - 130
<b>GSPA</b>	18	430	32" - 34" - 36"	9.0 e 12.0	2.1/2"	3650	200 - 300	3991	4126	4228	190 - 235	135 - 145
<b>GSPA</b>	20	430	32" - 34" - 36"	9.0 e 12.0	2.1/2"	4100	200 - 300	4324	4474	4580	245 - 265	150 - 160

**BALDAN** reservase el derecho de cambiar las características técnicas de este producto sin previo aviso.  
Las especificaciones técnicas són aproximadas y informadas en condiciones normales de trabajo.



## 04. ASSEMBLY

- 01 - Check the parts with the parts list that is inside the packing box.
- 02 - The assembly must always begin with the set of discs.
- 03 - Place the shaft Item 1, Figure 2, the concave thrust washer Item 2, one washer Item 3, a nut item 4, the latch item 5 and fix with the screw Item 6 as shown in figure 2. Note that the nut is facing with the tip of the shaft.
- 04 - Place the shaft item 1, the first disc item 7, one bearing \* Item 8, another disc Item 7, the separator reel item 9 and so on, until completing the assembly.
- 05 - When the set is complete with all discs, bearings and separator reels, place the convex thrust washer item 10, the washer Item 3, another nut Item 4, giving a prior tightening to firm the set. Check if the washers and discs did not come out of the socket.
- 06 - Then, wedge the set of discs and tighten the nut Item 4 through impacts. When it is about achieving maximum grip, adjust the lock Item 5 with the convex washer, always tighten the nut to match the drilling, fasten them through the screw Item 6.



### ATTENTION

*Before beginning assembly, place PROTECTIVE GLOVES on hands.*

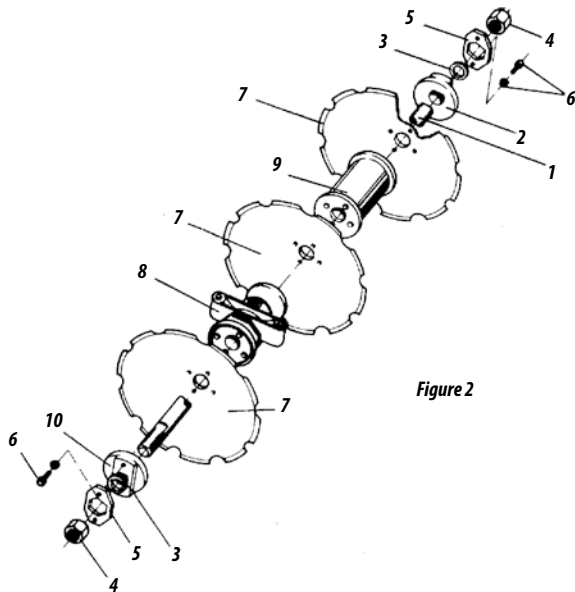
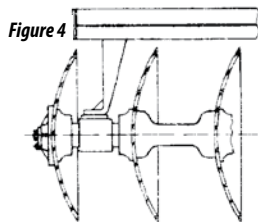


Figure 2

07 - Figure 3 shows the assembly of the disc items for each disc harrow model and its respective frames.

08 - When assembling the frame on the disc item, note that the bracket to fix the bearings (Shoe) should face the concavity of discs, as shown in figure 5.



**LEGEND**

- = MANCAL
- = SEPARATOR REEL
- ⌋ = DISC

GSPA 10 Discs

GSPA 12 Discs

GSPA 14 Discs

GSPA 16 Discs

GSPA 18 Discs

GSPA 20 Discs

*Figures 3*

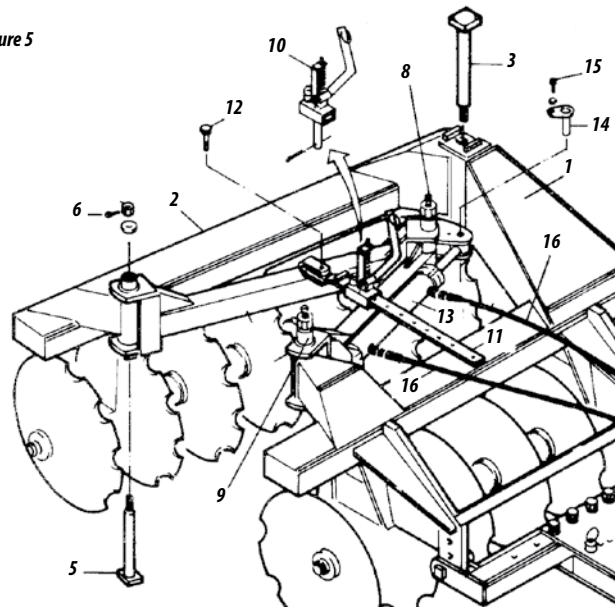
## UNION OF REAR AND FRONT FRAMES

- 01 - Couple the front frame Item 1, Figure 6, to the rear frame item 2 through the coupling shaft item 3 with flat washer, nut and lock screw. Couple the rear stabilizer bar item 4 on the rear frame item 2, with the coupling shaft Item 5 and washer, nut and lock screw item 6.
- 02 - Attach the rear stabilizer bar item 4 with front stabilizer bar item 7 through the coupling shaft item 8, coupling it to the front frame item 1, with the coupling shaft Item 9.
- 03 - Place the lock handle item 10 on the front stabilizer bar, passing the adjustment latch item 11 through inside the lock handle, coupling the rear stabilizer bar through screw item 12.

## ASSEMBLING THE HYDRAULIC PISTON (OPTIONAL)

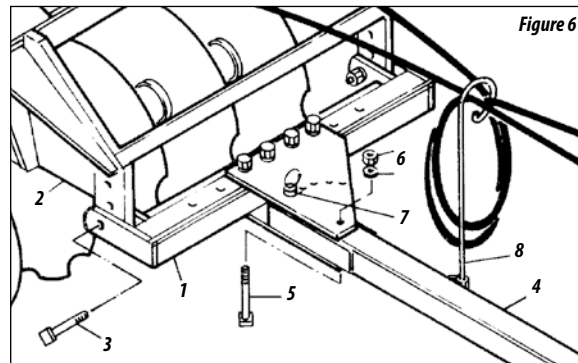
- 01 - Place the piston Item 13, so that the base of the cylinder is placed on the front stabilizing bar and on the rod of the rear stabilizer bar through pins item 14 locking with the screw item 15.
- 02 - Connect the hoses item 16 in the hydraulic piston.

Figure 5



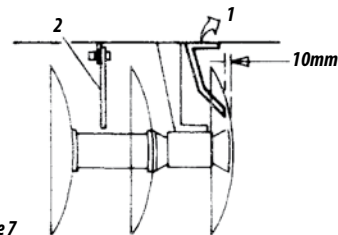
## ASSEMBLING THE COUPLING HEADER

- 01 - Place the complete crossbar item 1 Figure 7, in the front frame item 2 using the screws Item 3.
- 02 - Place the coupling header item 4, between the upper and lower plates of the cross bar, fixing it with the screw item 5, washer and nut item 6. Place the adjustment pin item 7.
- 03 - Fix the hose support Item 8 in the header, passing the hoses through it.



## ASSEMBLING THE WIPERS

- 01 - Assemble the wipers item 1 in Figure 8 on front and rear frames, leaving a clearance of about 10 mm between the disc and the wiper.
- 02 - Assemble also the central wipers item 2, figure 8 on front and rear frames.





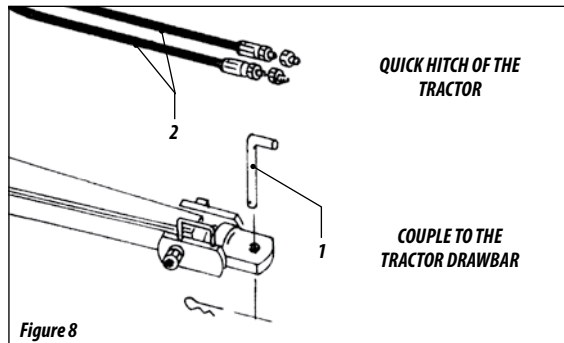
## 05. COUPLING THE DISC HARROW TO THE TRACTOR DRAWBAR

- 01 - To couple the disc harrow to the tractor drawbar, their alignment should be observed, adjust the exact height of the disc harrow and use the coupling pin "L" item 1 Figure 9.
- 02 - When coupling the implement, find a safe and easily accessible place, always use low gear with low throttle.
- 03 - Connect the hoses item 2 on the quick hitch of the tractor.
- 04 - Before connecting or disconnecting hydraulic hoses, stop the engine and relieve the system pressure, activating the command levers completely.
- 05 - Make sure that, by relieving the system pressure, no one gets hurt with the movement of the equipment.



### NOTE

*If the tractor is not equipped with hydraulic control and output for remote control, Baldan will optionally provide remote control kit appropriate for each tractor model.*

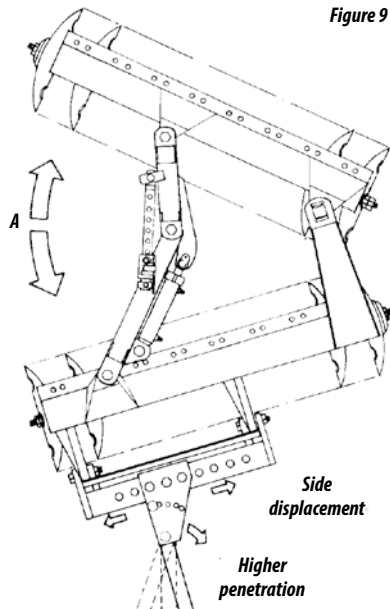


## 06. ADJUSTMENTS AND OPERATIONS

### ADJUSTING THE DISC HARROW OPENING

- 01 - To obtain optimum penetration of discs, the disc harrow opening varies according to the type of soil.
- 02 - In soils more difficult to penetrate, increase the opening "A" of the disc harrow, according to figure 9.

Figure 9



03 - In loose and lighter soils, you should reduce the disc harrow opening.

04 - To open or close, pull the rope that goes up the tractor driver, releasing the opening adjustment set. If you want to open the disc harrow, move the tractor forward, if you want to close the disc harrow, move the tractor backward.

05 - For transportation, completely close the disc harrow.



### IMPORTANT

*Increasing the angle "A" - higher penetration.*

*Reducing the angle "A" - less penetration.*

### SIDE DISPLACEMENT OF THE DISC HARROW

01 - This side displacement should be done when the disc harrow is not giving a perfect finishing, that is, leaving tractor trail. The disc harrow should work centralized with the tractor traction line. To do this, move the upper and lower header plates to the right or to the left, as shown in figure 9.

02 - The coupling header operates in the center hole of the top and bottom plates for intermediate soils; displacing the other holes, changes the angle of the front section, as in Figure 9.

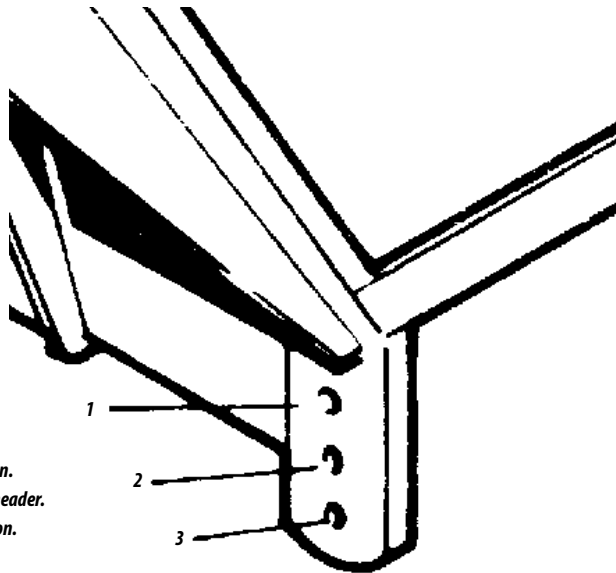
## ADJUSTING THE CROSS BAR ON THE FRONT FRAME

01 - The coupling arms are welded in the front frame, which has three holes as in Figure 10, whose main purpose is to level the header of the disc harrow in relation to the tractor drawbar.



### ATTENTION

*When engaged in the upper hole, penetration will be greater and therefore in the lower hole, penetration will be lower.*



- 1 - Increases penetration.*
- 2 - Levels the coupling header.*
- 3 - Decreases penetration.*

Figure 10

## 07. OPERATIONS

- 01 - Before starting operations with the disc harrow, revise it completely, retighten all bolts, nuts, hose terminals, axes and especially disc sections.

### HOW TO START HARROWING

- 01 - To start harrowing, you should follow the terraces or contour lines, starting operation so that the terrace is on the left side of the tractor driver.
- 02 - Do not turn it to the right, see figure 18. The harrowed soil must always be at the left side of the tractor driver.
- 03 - The figure below shows some operation systems.

### TO HARROW TOWARDS THE OUTSIDE

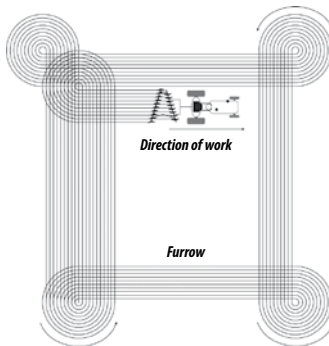
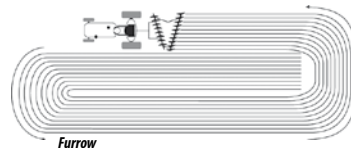


Figure 11

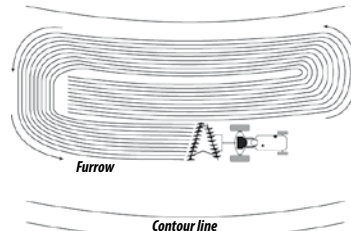
### TO HARROW TOWARDS THE INSIDE

- 01 - In this way, we obtain greater perfection. When you start working in the headboards, you should start another plot.



### PLOTS WITH CONTOUR LINES

- 01 - In soils with contour lines, it is usual to start two plots at a time, having the care to start working with the contour line of the left side of the tractor driver. When you reach the middle of the contour line, you should start another plot to save fuel.



## 08. LUBRICATION

- 01 - Lubrication is essential for optimal performance and durability of moving parts of your disc harrow.
- 02 - Before start working, carefully lubricate all grease fittings, always observing re-lubrication intervals, making sure about the quality of the lubricant, as its efficiency and purity, avoiding the use products contaminated by water, dirt, etc.

### LUBRICATION OF ROLLER BEARINGS IN GREASE

- 01 - Clean the grease fitting with a clean and lint-free cloth and replace damaged ones.
- 02 - The amount of grease in each bearing is 150 grams.
- 03 - The roller bearings should be re-lubricated every 12 hours, using the grease specified in the table below.
- 04 - The oil change should be done every 1200 working hours. Use SAE 90.mineral oil

### LUBRICATION OF ROLLER BEARINGS IN OIL BATH

- 01 - In the first days of working with the disc harrow, check the oil level of bearing daily and the seals.
- 02 - Check the oil level every 120 hours.
- 03 - The oil change should be done every 1200 working hours. Use SAE 90 mineral oil.

### TABLE GREASES AND EQUIVALENTS

<i>Manufacturer</i>	<i>Type of grease recommended</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 Ipflex 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

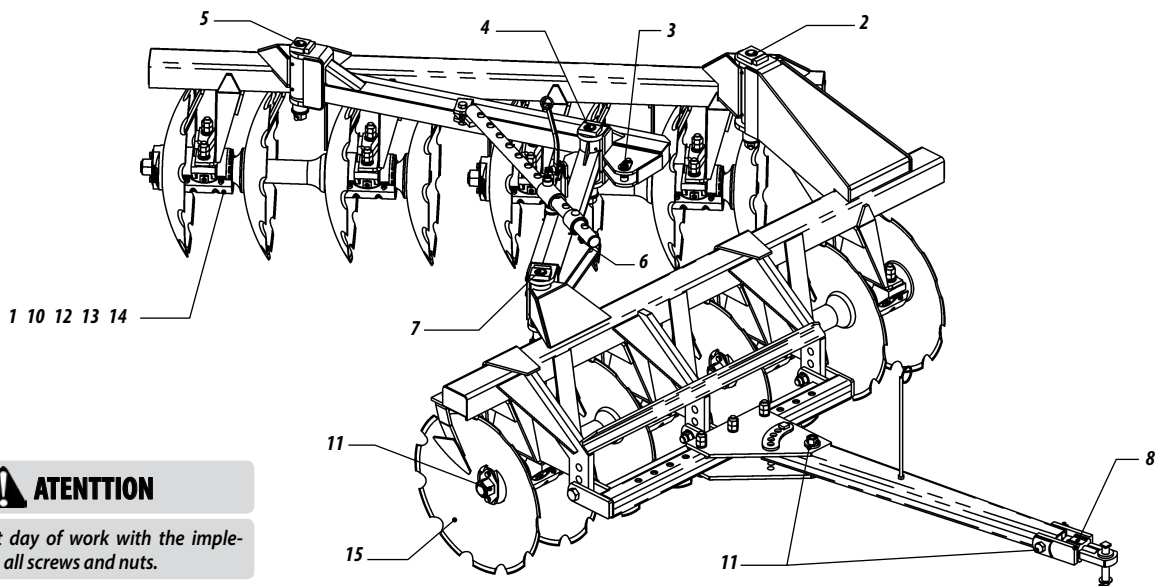


If there are manufacturers and /or equivalent brands which are not listed in the table, refer to the manufacturer's technical manual.

## 09. LUBRICATION POINTS

Table 3

Item	Part Description	Number of nipples						Oil replacement	Lubricate with grease	Retighten	Replace	Check	Maintenance intervals
		GSPA 10 Discs	GSPA 12 Discs	GSPA 14 Discs	GSPA 16 Discs	GSPA 18 Discs	GSPA 20 Discs						
1	Bearings	4	4	6	8	8	8		X				12 hours
2	Unión de las armaciones	2	2	2	2	2	2		X				60 hours
3	Piston rod	1	1	1	1	1	1		X				
4	Union of stabilizer bars	2	2	2	2	2	2		X				
5	Rear stabilizing bar	2	2	2	2	2	2		X				
6	Coupling shackle	1	1	1	1	1	1		X				
7	Front stabilizer bar	2	2	2	2	2	2		X				
8	Coupling header	1	1	1	1	1	1		X				
9	Hydraulic system											X	120 hours
10	Bearing oil											X	
11	Nuts, screws and shafts									X			
12	Bearings							X					1200 hours
13	Seals										X		1500 hours
14	Roll bearings										X		
15	Discs										X		Whenever required



## ATTENTION

After the first day of work with the implement, tighten all screws and nuts.

Figure 12

## ADJUSTMENT OF BEARINGS

• When bearings show clearances, adjust them as follows:

- 01 - Remove the washer Item 1 Figure 13.
- 02 - Loosen the screws item 2 and remove the cover item 3.
- 03 - Remove 1 or 2 gaskets item 4 from the bearing cover.
- 04 - Replace the cover and retighten it.
- 05 - If the clearance persists, you can face the cover item 3, to increase the adjustment, and then assemble the bearing using as many gaskets as required.
- 06 - The bearing must rotate freely, i.e. without axial or radial clearances.

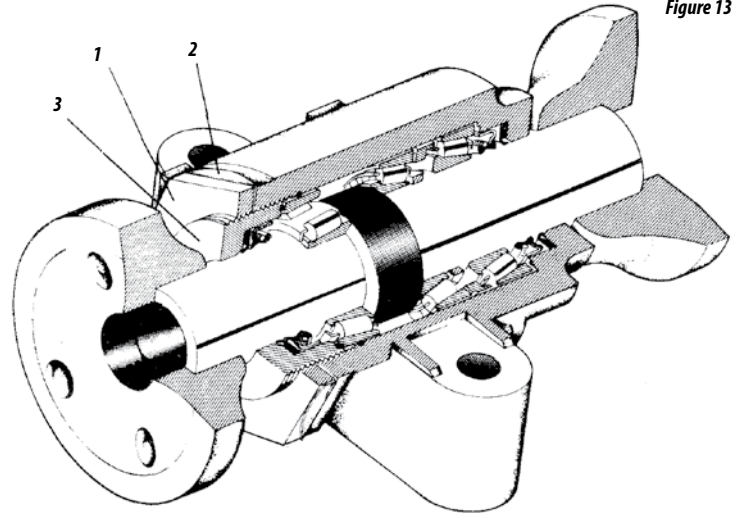


Figure 13

## 10. 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.



## 11. APPROXIMATE PRODUCCION

01 - To calculate the approximate hourly production of the disc harrow, use the following formula:

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

### WHERE

- $A$  = Area to be worked
- $L$  = Working width of the disc harrow (in meters)
- $V$  = Average tractor speed (meters / hour)
- $F$  = Production factor - 0.90
- $X$  = Hectare value - 10,000 m<sup>2</sup>

• **Example:** Using a 24-disc disc harrow, how many Hectare it will produce in an hour of work at an average speed of 7km / h?

- $A$  = ?
- $L$  = 1.90m
- $V$  = 7.000m/h
- $F$  = 0.90
- $X$  = 10.000 m<sup>2</sup>

$$A = \frac{1,90 \times 7.000 \times 0,90}{10.000} = 1,20 \text{ Ha/h}$$

## 12. TABLE OF APPROXIMATE PRODUCTION

Table 4

Model	Spacing (m)	Working length (m/h)	Average speed	Production factor
				Hectares
<b>GSPA 10</b>	1,90	7.000	0,90	1,20
<b>GSPA 12</b>	2,35	7.000	0,90	1,48
<b>GSPA 14</b>	2,80	7.000	0,90	1,76
<b>GSPA 16</b>	3,20	7.000	0,90	2,01
<b>GSPA 18</b>	3,65	7.000	0,90	2,30
<b>GSPA 20</b>	4,10	7.000	0,90	2,58

01 - The formula to calculate the appropriate production refers to the calculation of the area to be worked by the disc harrow. If you want to know how long it will take to work an area of known value, simply divide the value of this area by the hourly production of the disc harrow.

- Example: How long (x) it will take for a 10-disc disc harrow to produce 35 hectares at an average speed of 7km / h?

$$X = \frac{35 \text{ Ha}}{1.70 \text{ Ha / h}} = 20,5 \text{ hours approx.}$$

02 - The hourly production can vary by factors that alter the pace of work, for example: humidity and soil hardness, land slope and inadequate adjustments. These factors are different from those in the Table above, which shows field work in soils under normal conditions.



### 13. IDENTIFICATION

- 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

**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

Modelo	
Nº de Série	Data



#### MARKETING

EDITING CATALOGS AND MANUALS

Code: 6055010483-3  
Revision: 01  
CPT: GSPA29909



#### ATTENTION

*The drawings in these instructions are merely illustrative.*



#### CONTACT

*In case of doubt **do not** operate the equipment, please contact our **After-sales Service**.  
Phone: 0800-152577  
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:* \_\_\_\_\_

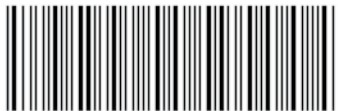
*Model:* \_\_\_\_\_

*Warranty Number:* \_\_\_\_\_ *Serial Number:* \_\_\_\_\_

*Purchase Date:* \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ *Invoice Number:* \_\_\_\_\_



[illegible]



6 0 5 5 0 1 0 4 8 3 3



**Baldan**



## **BALDAN IMPLEMENTOS AGRÍCOLAS S/A.**

Av. Baldan, 1500 | Nova Matão | CEP: 15993-000 | Matão-SP | Brasil

Phone: (0\*\*16) 3221-6500 | Fax: (0\*\*16) 3382-6500

Home Page: [www.baldan.com.br](http://www.baldan.com.br) | e-mail: [sac@baldan.com.br](mailto:sac@baldan.com.br)

Export: Phone: 55 16 3221-6500 | Fax: 55 16 3382-4212 | 3382-2480

e-mail: [export@baldan.com.br](mailto:export@baldan.com.br)