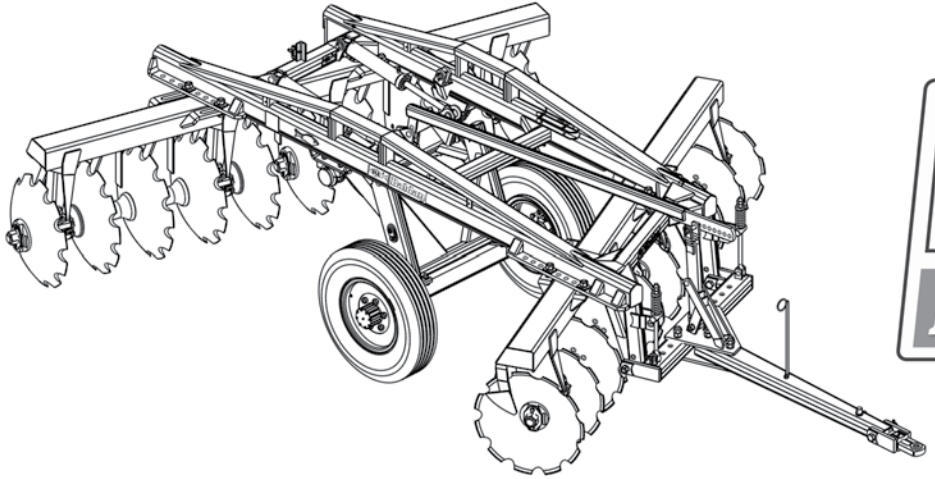
INSTRUCTION MANUAL



BIA®

Baldan

Heavy Harrow Grade
Remote Control - GSPCR

INTRODUCTION

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

Our implements are designed, anticipating all the operations that they must perform, in the most varied soil types and conditions. They demonstrate a ruggedness that is unmatched for over 70 years of experience, versatility and hard work. The Company is a proud holder of the ***ISO 9001*** certificate.

The purpose of this manual is assist you, in assembling, regulating and making the final adjustments to promote a smooth operation, containing recommendations to maintain your implement in top conditions.

If you will provide the little care that is necessary, you will be assured of a good companion for many long years.

We recommend therefore, that the equipment operator carefully observes all the items in this manual, to become intirely familiarized, before entering the field, in order to increase the working life of your equipment.

Please make sure that the safety rules are being obeyed at all times.

When necessary consult the ***Baldan Dealer*** or, in last instance, the ***Baldan Technical Service Department***.

Instruction Manual

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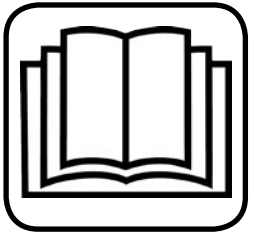
INDEX

01. SAFETY RULES

The safety alert symbol identifies important message on the engine, when you see this symbol, be alert to the possibility of death or personal injury. Fallow the instructions in the safety message.

ATTENTION

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



ATTENTION

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

ATTENTION

•Never carry people over the tractor or 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 tipping when working on slopes
• Never use excessive speed.

ATTENTION

•Before any equipment maintenance, make sure that is properly stopped.
• Avoid getting hit

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.

⚠ ATTENTION

• Keep yourself away from the active elements of the machine (Discs), they are sharp and can cause accidents.
• To do any service on the discs use safety gloves.

⚠ ATTENTION

•The hydarulic oil works under pressure and can cause serious injury, if has any leak. always check the hoses condition. If has any leakage replace it.
•Before connect ans disconnect the hydraulic hoses release the pressure.

⚠ *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.*

ATTENTION

The mismanagement of this equipment can result in serious or fatal accidents. Before placing equipment in operation, carefully read the instructions in this manual. Make sure that the person responsible for the operation is instructed on the proper handling, insurance if you have read and understood the instruction manual for this product.

01- ⚠ When operating the equipment make sure that nobody remains closer or on the same.

02- ⚠ During assembly or when mounting or dismonting the discs, use gloves.

03- ⚠ Turning on/off the hydraulics hoses, relieve the presure od circuit.

04- ⚠ Periodically check the quality consevations of hoses. If has any evidence of oil leak, replace it immediately, because the oil works under high pressure and and can cause serious injury.

05- ⚠ Do not use baggy clothes that can twist to the machine.

06- ⚠ Before you start the tractor engine, be firmly seated and sure you know thr operation of both, tractor and implement. Make sure the gear lever is in the neutral position, the P.T.O. drive is disengaged, and that the hydraulic lever command is also in the neutral position.

07- ⚠ Do not start the tractor engine indoors without adequate ventilation, the exhaust gases are harmful to health.

08- ⚠ When hitching the implement onto the tractor obliges you to maneuvre the tractor, make sure that there is enough room and that nobody close aroud can be caught. Always maneuvre with the engine in indle speed and be prepared immediatly the break when necessary.

09- ⚠ **Do not do regulations with the implements working.**

10- ⚠ **When operating on sloping land in contours, procced carfully always keep the machine stability. In case of instability initiation, reduce speed turn the tractor hill downwards and lever lift the implement.**

11- ⚠ **Always drive at safety compatible speeds, mainly when working in downhill, keep the tractor always hitched.**

12- ⚠ **Driving the tractor on roads keep the break pedals connected.**

13- ⚠ **Do not work with the tractor front light. Se a frente tiver tendência para levantar adicione mais pesos na frente ou nas rodas dianteiras.**

14- ⚠ **When you leave the tractor, make sure that the gear is in the neutral position, and the parking breaks applied. Never let the implement hitched at the tractor on lift hydraulic system.**

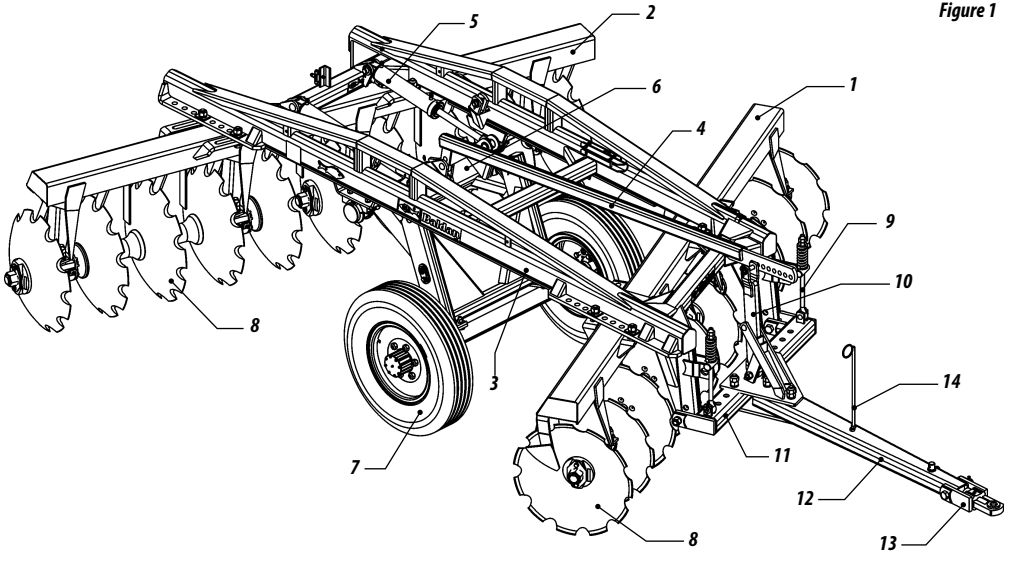
15- ⚠ **Alcohol and drus may generate loss of reflex and changing of operator fisical conditions. So do not work with this equipment in use of this substance.**

16- ⚠ **Read and explain all the proceeds above to the user that can not read.**

02. COMPONENTS

01 - Front frame
02 - Rear frame
03 - Main frame
04 - Stabilizer bar
05 - Cylinder
06 - Wheels articulation axle
07 - Wheels
08 - Disc section
09 - Stabilizer rod
10 - Stabilizer bar support
11 - Transversal bar
12 - Hitch header
13 - Hitch shackle
14 - Hoses support

Figure 1



03. TECHNICAL SPECIFICATIONS

Tabela 1

Model	Nr of Discs	Disc spacing (mm)	Disc diameter (ø)	Spherical disc blade (mm)	Axle diameter (ø)	Working width (mm)	Working depth (mm)	Approx. weight (Kg)			Required tractor power (HP) (Wheels)	Required tractor power (HP) (Crawler)
								32"	34"	36"		
GSPCR	10	430	32" - 34" - 36"	9,0 e 12,0	2.1/2"	1900	200 - 320	3318	3364	3422	150 - 160	90 - 100
GSPCR	12	430	32" - 34" - 36"	9,0 e 12,0	2.1/2"	2350	200 - 320	3491	3581	3649	180 - 192	108 - 115
GSPCR	14	430	32" - 34" - 36"	9,0 e 12,0	2.1/2"	2800	200 - 320	3910	4015	4094	210 - 224	126 - 135
GSPCR	16	430	32" - 34" - 36"	9,0 e 12,0	2.1/2"	3200	200 - 320	4230	4350	4410	240 - 256	144 - 152
GSPCR	18	430	32" - 34" - 36"	9,0 e 12,0	2.1/2"	3650	200 - 320	4607	4742	4844	270 - 288	162 - 170
GSPCR	20	430	32" - 34" - 36"	9,0 e 12,0	2.1/2"	4100	200 - 320	4765	4915	5029	300 - 320	180 - 190
GSPCR	22	430	32" - 34" - 36"	9,0 e 12,0	2.1/2"	4500	200 - 320	5330	5480	5630	330 - 352	210
GSPCR	24	430	32" - 34" - 36"	9,0 e 12,0	2.1/2"	4900	200 - 320	5900	6052	6200	360 - 384	230

The technical specifications are approximate and informed in normal work conditions.
Baldan reserves the right to modify any technical specifications without prior notice.

04. ASSEMBLY

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

02 - The assembly should start with the disc section.

03 - Put on the axle (1), the concave washer (2), washer (3), a nut (4), lock (5) and fix with the bolt (6) according to figure 5.

04 - Put the axle (1), the first disc (7), a bearing (8), another disc (7), spliting spool (9) according to figure 2.

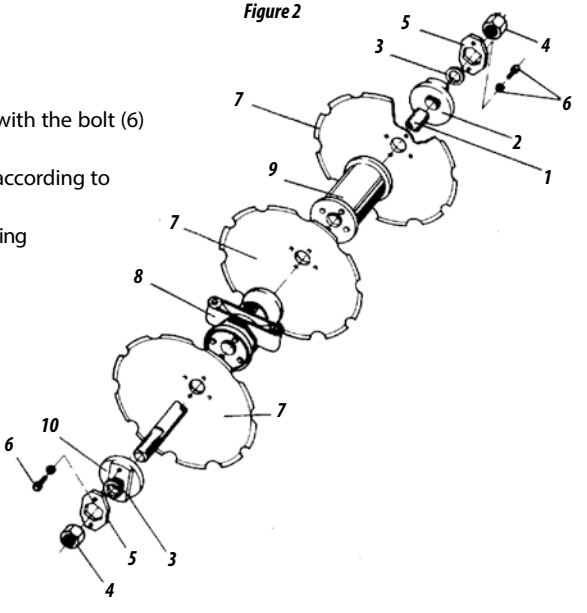
05 - When the set is finished (complete) with all the elements (disc, roller bearing and spliting spools) put a convex washer (10), a washer (3) and finally put the nut (4), tightening all the set.

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

ATTENTION

Before starting the assembly, put on the gloves.

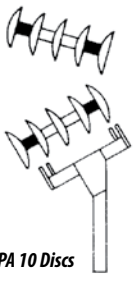
Figure 2



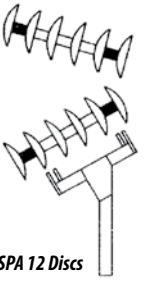
07 - Check the figure 3 witch shows the assembly of the discs sections to each grade model.

08 - Watch that the front discsection must stay on the rear section.

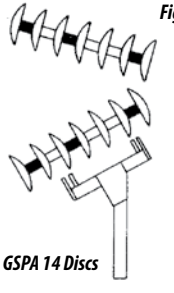
Figures 3



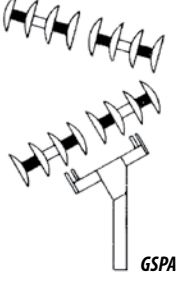
GSPA 10 Discs



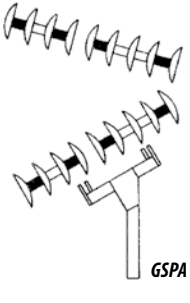
GSPA 12 Discs



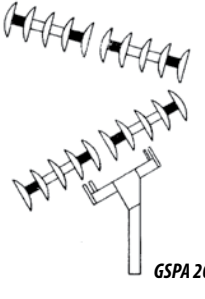
GSPA 14 Discs



GSPA 16 Discs



GSPA 18 Discs



GSPA 20 Discs

LEGEND

= Roller bearing

= Spliiter spacer

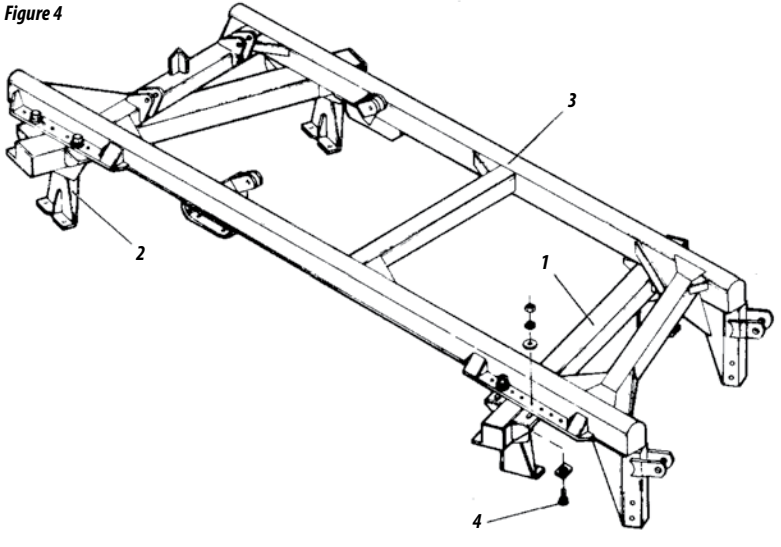
= Discs

REAR AND FRONT FRAME ASSEMBLY

09 - Put the frames in a clear and flat surface;

10 - Put the main frame (3) on the frames and fix them with bolts (4), lockers, washer and nuts.

Figure 4



11 - Lift the rear or front frame, align the disc section, note their placement in figure 3. Assembly the frame (1) with the disc section through the bolt (2) according to figure 4, watching that the support of the bearing fixation must face the disc concavity according to figure 6.

12 - Lift the other part of the implement and repeat the operation above. Checking the concavity of the disc section must face the opposite side of the other.

13 - Fix the disc scrapers (1) into the front and rear frames allowing a looseness of 10mm between each disc and scraper, according to figure 7.

14 - Put also the central disc scrapers (2) onto the front and rear frames according to figure 7.

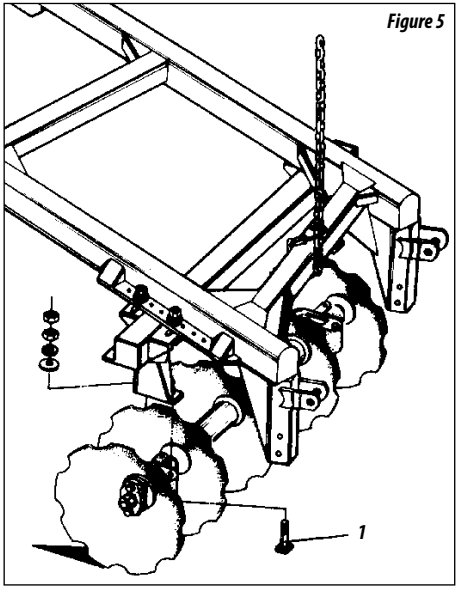


Figure 5

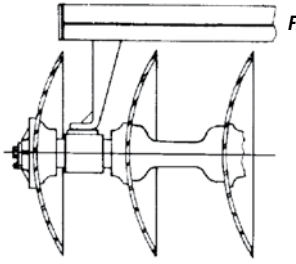


Figure 6

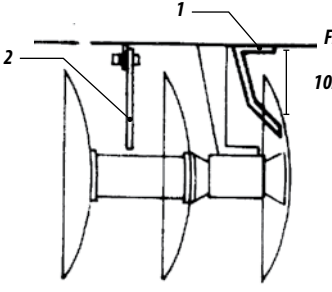


Figure 7

HYDRAULIC ASSEMBLY AND TYRES COUPLING

15 - Couple the axles (2) onto the articulation axle (3) fixing them into the main frame (1) with bolts. Put the articulation axle support (4) onto the axle (3) using pins (5) and lock it with bolt. Put the plates (6) of the axle support on the main frame (1) using the pin (7) locking it with a counterpin (8). Fix the axle (9) into the axle support (4) with the bolts (10).

16 - Fix the wheels (11) into the axle (9) using nuts (12).

17 - Put the articulation cylinders (13) onto the main frame using a pin (14) and the rod fixed at the articulation axle with a pin (15).

18 - Fix the oil distributor (16) into the main frame (1). Couple the hoses of the cylinder (17) to the oil distributor and fix them into the frame with a bracelet (19), according to figure (9).

19 - Put the stabilizer bar (20) onto the articulation axle (3) with a pin (21).

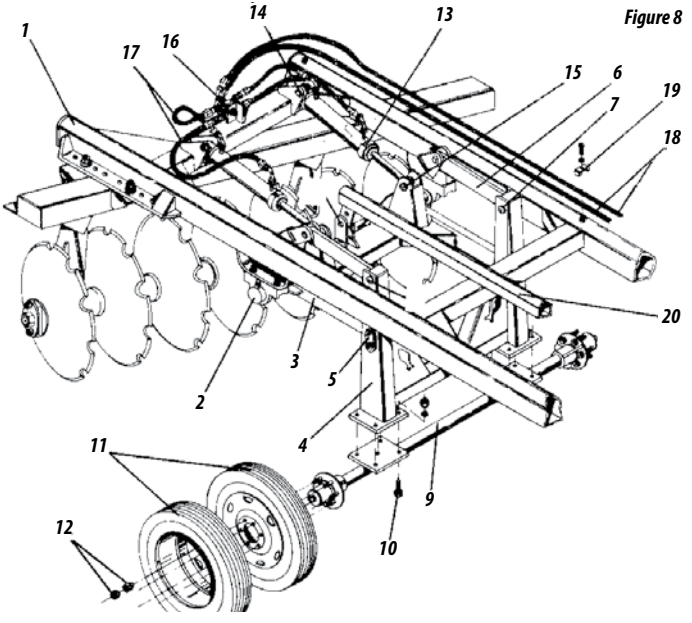


Figure 8

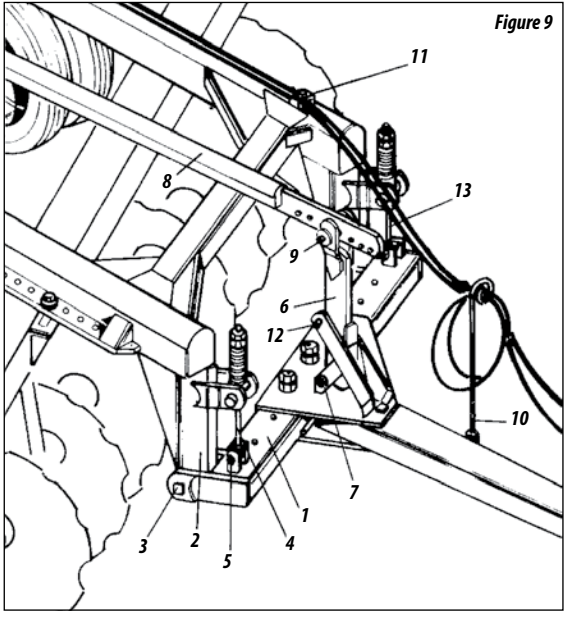


Figure 9

GRADE HITCH ASSEMBLY

20 - Fix the hitch header (1) into the frame (2) with bolts and nuts (3).

21 - Introduce the stabilizer rod (4) between the main frame plates, fix the interior part of the rod into the transversal bar with bolts (5).

22 - Puts the stabilizer bar support (6) onto the superior plate of the header with a bolt (7). Couple the frontal part of the stabilizer bar (8) into the support with a pin (9).

23 - Fix the hoses support (10) into the hitch header, and introduce the hoses through its orifice.

24 - Put the hoses braces (11) onto the main frame according to figure (10).

25 - The pin (12) must be placed only to help hitching the grade into the traction bar of tractor. Put the pin (12) and move the tyres, so the hitch will be lifted helping the grade hitching.

05. HITCHING TO THE TRACTOR

01 - Before doing so, verify if the tractor is ready for the operation and that the front and wheel weights are in place, according to the manufacturer's specifications.

02 - To hitch the grade, find out a safety place and easy access, using always a reduced gear with a low acceleration.

03 - Attch the rubbers (2) into the tractor quick hitch.

⚠ ATTENTION

To hitch the grade into the tractor traction bar, it must be observed the alignment of the tractor, regulate the exact height of the hitch and use the pin (2) according to figure 10.

⚠ ATTENTION

To connect the hydraulic hoses to the tractor, witch is the next step, stop the tractor engine and take all the pressure off by using the tractor commands. Beware for accidents with surrounding people.

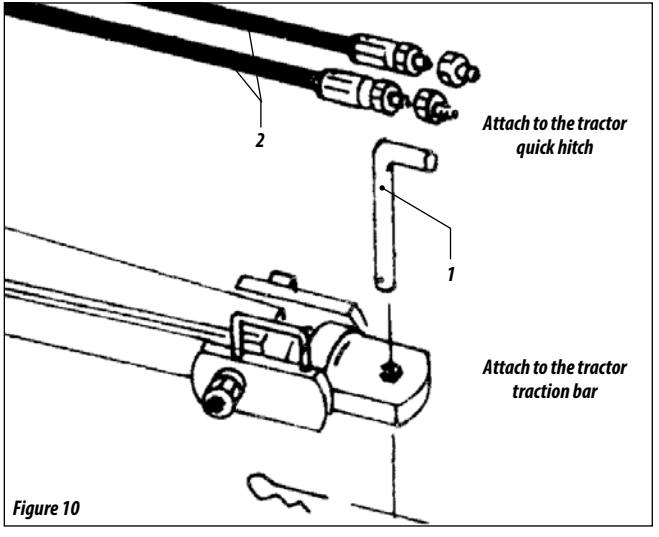


Figure 10

ADJUSTING THE PENETRATION ANGLE

01 - In order to obtain an ideal disc penetration, it is necessary to regulate the angle witch varies to each soil type:

- In hard penetration soils increase the opening of the harrow.
- In soft penetration soils decrease the opening of the harrow.

02 - To open or close the harrow, take the bolts that fix the central frame out and move the frames to obtain an ideal adjustments, as it is shown on the letter "A" on figure 11.

03 - The wheels also help to control the disc depth.

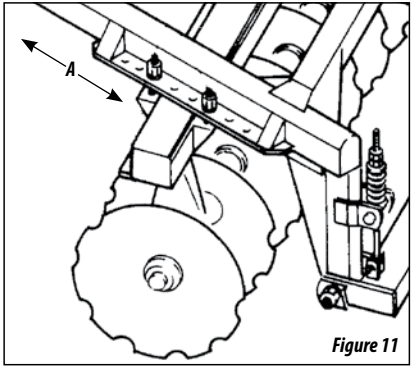
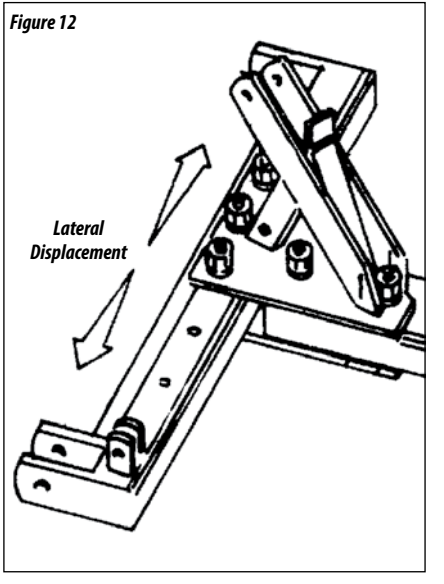


Figure 11

DISPLACEMENT ADJUSTMENT

04 - This lateral displacement is used to center the harrow behind the tractor, normally when working in unleveled areas. In order to get this centralization, move the inferior and superior plates (1) of the header to the left or right according to figure 12.

Figure 12



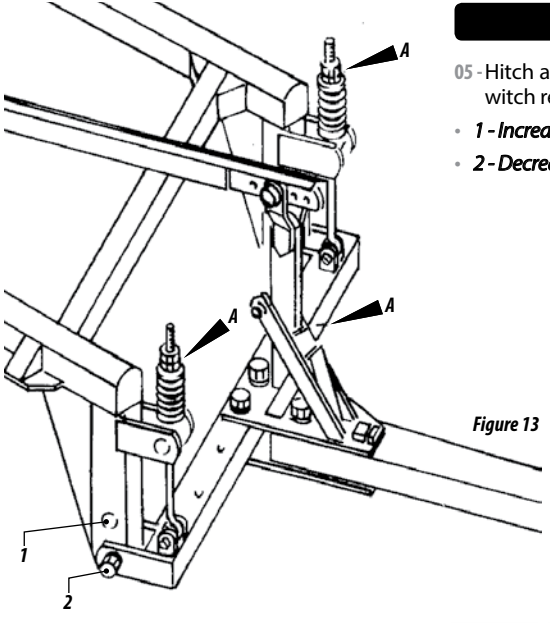


Figure 13

HITCH TRANSVERSAL BAR ADJUSTMENT

05 - Hitch arms are welded on the main frame, these arms have two orifices, according to figure 13, witch reason is used for levelling the hitch beam to the tractor hitch.

- *1 - Increase penetration*
- *2 - Decrease penetration*

NOTE

When you fix the transversal bar on point 1, you'll get more penetration. On point 2, you'll get less penetration.

STABILIZER ROD AND STABILIZER BAR SUPPORT ADJUSTMENTS

06 - Leave a minimum distance of 10 to 20mm from the spring bushing. Also maintain a minimum distance of 20mm between stabilizer bar and the hitch beam support (A) on figure 13.

07. OPERATIONS

01 - Before start the operations with the harrow, review it completely, re-tighten all bolts, nuts, hoses terminals, axes and especially the disc section.

HOW TO START THE HARROWING

02 - At the start the harrowing should always follow the contour terraces or string, starting the operation in order to get the roof on the left side of the tractor driver.

03 - Do not turn to the right side, look the Fig 14. The harrowing ground should always be to the left of the tractor driver

04 - In the follow figur we show some operations system.

HARROWING INSIDE OUT WAY

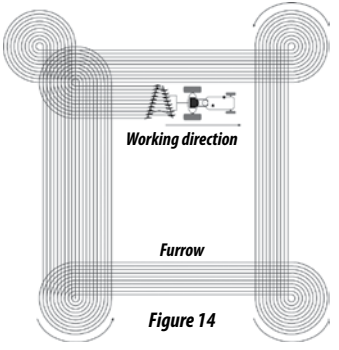
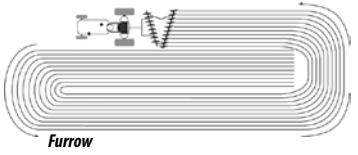


Figure 14

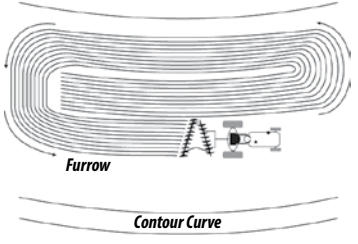
HARROWING TOWARDS INSIDE OUT

05 - In this way we obtain greater perfection. When you're walking in the headwaters should be very carefully to start other block.



PLOTS WITH CONTOUR LINE

06 - In terrain with contour plots is usual to get two plots at time, taking care to start the work with the contour of the left side of the tractor driver. When you get in the middle of the contour, it should have another plot to reduce fuel consumption.



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

08 - Take out the washer (1) figure 15.

09 - Release the bolts (2) and take out the lid (3).

10 - Take the joints 1 or 2 (4) out of the lid of the roller bearing. Put it again and tighten it.

NOTE

Don't assemble the roller bearing whitout a joint.

08. 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.

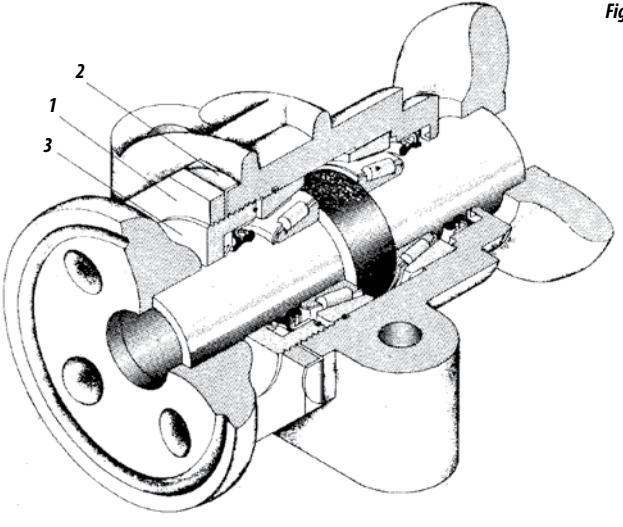


Figure 15

09. LUBRICATION

01 - The lubrication is isdispensable for a good performance and longer life of the machine motive parts.

02 - Before starting the operation, lubricate carefully all the devices always observing the gap time between the lubrication, assuring the quality of the lubricant, itsefficiency and purity, avoiding the use of products containing water, soil etc...

LUBRICATION OF THE ROLLER BEARINGS

03 - Clean all the fat devices with a clean cloth and if there is any damaged device replace it.

04 - The quality of fat in each bearing is 1.100 grams.

05 - The fat roller bearings will have to be lubricated every 12 working hours, using a specific fat at the table below:

FRICTION ROLLER BEARINGS LUBRICATION

06 - At the first working days with the grade, check the oil level of the roller bearings daily and the retainers too.

07 - Check the oil level every 120 working hours.

08 - The oil change must be done every 1200 working hours. Use the mineral oil SAE 90.

TABLE OF EQUIVALENT AND GREASES

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

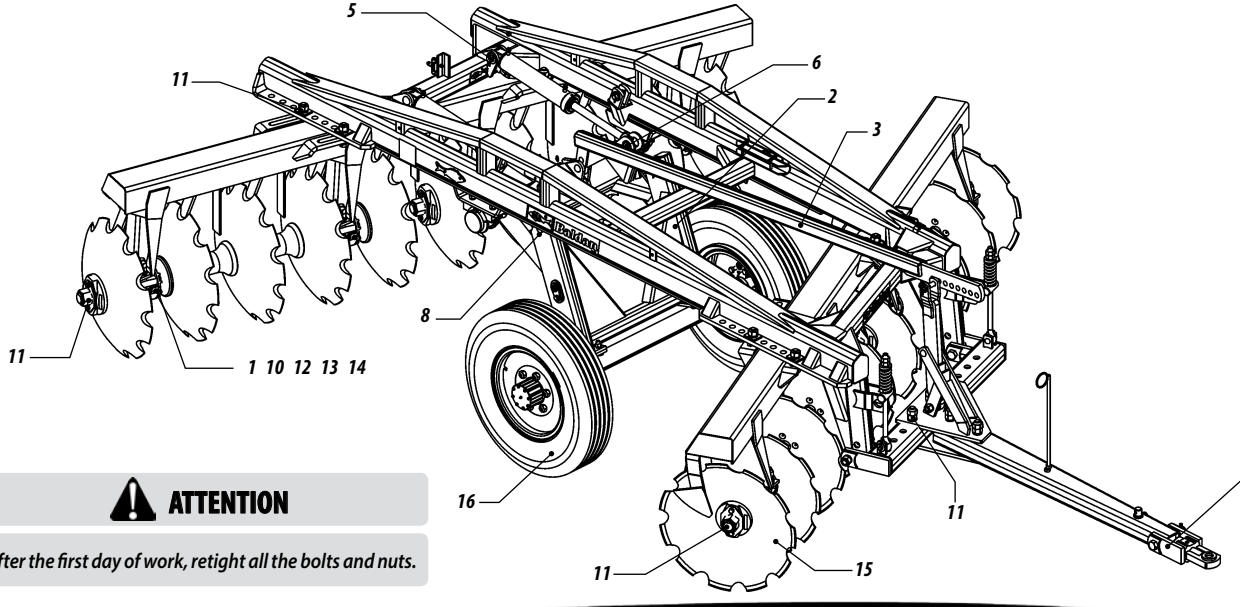
Table 2

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

10. PONTOS DE LUBRIFICAÇÃO

Table 3

Item	Description	Fat device numbers						Oil Change	Lubrication with fat	Retighten	Replace	Check	Maintenance gap
		GSPCR 10 Discs	GSPCR 12 Discs	GSPCR 14 Discs	GSPCR 16 Discs	GSPCR 18 Discs	GSPCR 20 Discs						
1	Bearings	4	4	6	8	8	8		X				12 hours
2	Articulation axle pins	2	2	2	2	2	2		X				
3	Wheel cube	2	2	2	2	2	2		X				60 hours
4	Axle cube	2	2	2	2	2	2		X				
5	Piston clamp	2	2	2	2	2	2		X				
6	Piston rod clamp	2	2	2	2	2	2		X				
7	Hitch shackle	1	1	1	1	1	1		X				
8	Support articulation plate	4	4	4	4	4	4		X				
9	Hydraulic system											X	
10	Bearing oil											X	120 hours
11	bolts and nuts									X			
12	Bearings							X					1200 hours
13	Retainers										X		1500 hours
14	Rollers										X		
15	Discs										X		When needed
16	Wheels										X		



ATTENTION

After the first day of work, retight all the bolts and nuts.

Figure 16

11. HOURLY PRODUCTION OF THE GRADE GSPCR

01 - To calculate the hourly production of the GSPCR grades, it is necessary to use the following calculation:

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

WHERE:

A = Area
L = Width of the plow (meters)
V = Speed
F = Production factor
X = Measure of the hectare 10,000 m²

02 - ***Example***: GSPCR grades with 10 discs, how many Ha will it produce in a working hour, in a average speed of 7 km/h?

- **A** = ?
- **L** = 1,90m
- **V** = 7.000m/h
- **F** = 0,90
- **X** = 10.000m²

$$\frac{A = 1{,}90 \times 7.000 \times 0{,}90}{24.200} = 0{,}49 \text{ Ha/h}$$

12. ESTIMATE PRODUCTION TABLE

Table 4

Model	Working width (m)	Average speed (m/h)	Production factor	Estimate hourly production
				Hectáres
GSPCR 10	1,90	7.000	0,90	1,20
GSPCR 12	2,35	7.000	0,90	1,48
GSPCR 14	2,80	7.000	0,90	1,76
GSPCR 16	3,20	7.000	0,90	2,01
GSPCR 18	3,65	7.000	0,90	2,30
GSPCR 20	4,10	7.000	0,90	2,58

01 - The estimate production calculation refers to the calculus of the working areas or worked areas by the grade.

02 - If you want to know the time that will be spent to work a determined area, divide the value of this area by the hourly production of the grade.

- ***Example: How long will it take the grade with 10 discs to produce 35 hectares, in a average speed of 7 km/h?***

$$X = \frac{35\ Ha}{1{,}20\ Ha/h} = 42 \text{ hours approximately}$$

03 - The daily production can vary by factors that modify the working rhythm, such as: humidity, soil hardness, soil inclination, and inadequate adjustments. These factors differ from the table above, witch we obtain working in soil with regular working conditions.

13. IDENTIFICATION

- To consult the spare part catalogue or ask a technical assistance from Baldan, always indicate the model (1), serial number (2) and manufacture date (3), that you will find in the identification tag.

ALWAYS ASK FOR ORIGINAL BALDAN SPARE PARTS

Marketing
Edition of Catalogs and Manuals

Code: *6055010592-9*
Revision: *01*
CPT: GSPCR102404616

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: 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 certified number: _____

Serial number: _____

Purchase date: _____/_____ / _____

NOTE:

Invoice. Nr: _____

6055010592 9

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