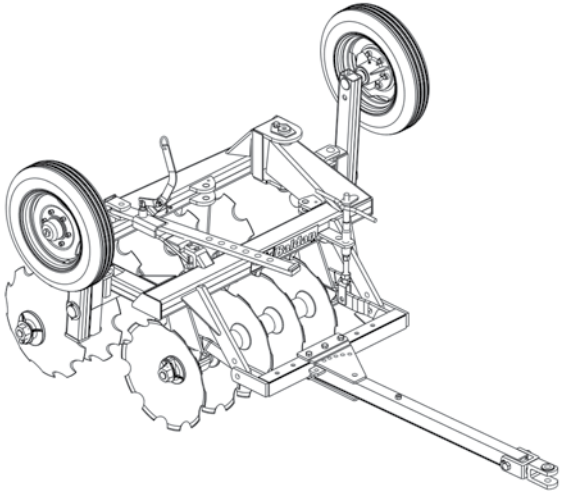
INSTRUCTION MANUAL



BIA®

Baldan

DRAG TYPE OFFSET DISC HARROW - GR / GRP

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 necessaries, 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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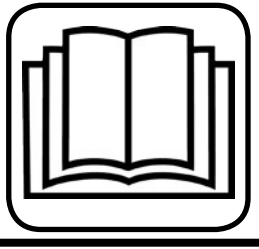
INDEX

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

• Do not work with the tractor if the front bee without enough weight to the rear equipment. There is tendency to lift , add weights at front or front wheels.

⚠ *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

• 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.

⚠ WARNING

• The hydraulic oil works under a pressure and can cause serious injuries, if has any leaks. Periodically check the state of hoses. If there is evidence of leaks immediately replace.

• Before connecting or disconnecting hydraulic hoses relieve the pressure of the system, set the command with the tractor off.

⚠ *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 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 with the implement, do not allow people to stay very close to or on the implement.

02- ⚠ In making any service mounting and dismounting the disks use gloves in their hands.

03- ⚠ Before connecting or disconnecting hydraulic hoses, relieve the system pressure triggering the command with the tractor off.

04- ⚠ Periodically check the state of conservation of hoses. If there is evidence of oil leaks immediately replace the hose, because the oil works under high pressure and can cause serious injury.

05- ⚠ Do not use loose clothing as they can curl up on the equipment.

06- ⚠ By placing the tractor engine in operation, is properly seated in the operator's complete knowledge and aware of the correct and safe handling of both the tractor and the implement. Always put the shifter in neutral, turn off the command from the power supply and place the commands in the hydraulic neutral position.

07- ⚠ Do not run engine indoors without adequate ventilation, because the exhaust fumes are harmful to health.

08- ⚠ When maneuvering the tractor to the implement hitch, make sure that you have the space needed and that there are people very close, always do the maneuvers in low gear and be prepared to brake in an emergency.

09- ⚠ **Do not make adjustments to the implement at work.**

10- ⚠ **By working inclined terrain, be careful trying to keep the necessary stability. In case of early imbalance reduces the acceleration, turn the wheels of the tractor to the side of the slope of the terrain.**

11- ⚠ **Always operate the tractor at speeds compatible with security, especially when working in rough terrain or slopes, always keep the tractor hooked.**

12- ⚠ **When driving the tractor on the roads, keep the brake pedals connected and use safety signs.**

13- ⚠ **Do not operate the tractor if the front is light. If there is a tendency to lift, add weights on the front or the front wheels.**

14- ⚠ **When leaving the tractor put the shifter in neutral and apply the parking brake. Never leave the implement hitched to the tractor in the raised position of the hydraulic system.**

15- ⚠ **Alcoholic beverages and some medications can cause loss of reflexes and change the operator's physical conditions. Therefore, never operate this equipment under the influence of these substances.**

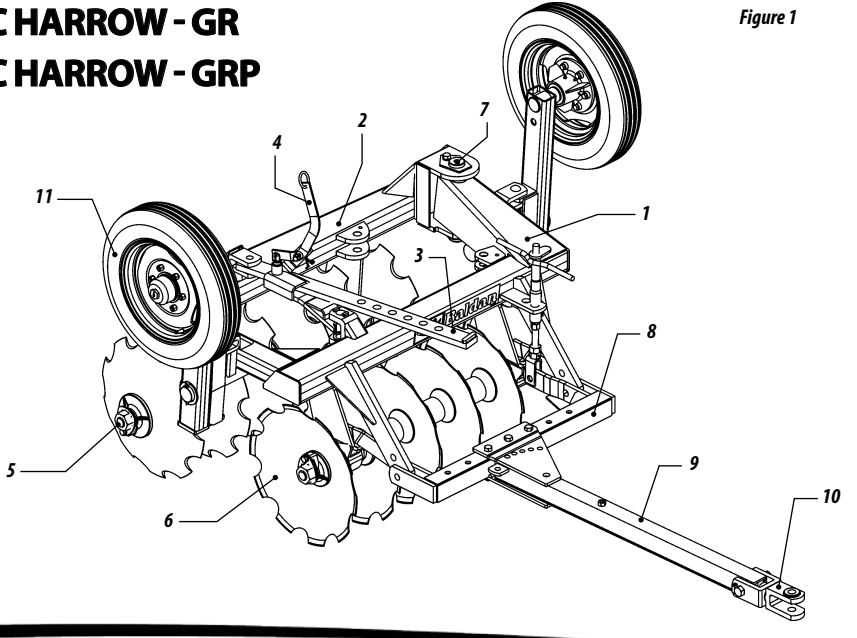
16- ⚠ **Read or explain all the procedures above to the operator who cannot read.**

DRAG TYPE OFFSET DISC HARROW - GR
DRAG TYPE OFFSET DISC HARROW - GRP

02 - COMPONENTS

01 - Front frame
02 - Rear frame
03 - Regulation lock
04 - Handle lock
05 - Rear stabilizer bar
06 - Front stabilizer bar
07 - Discs axle
08 - Discs
09 - Axle join frame
10 - Transversal bar
11 - Header coupling
12 - Jumel coupling
13 - Wheel

Figure 1



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)
							24"	26"	28"	
GR	10	235	24" - 26" - 28"	1.5/8"	1050	150 - 250	765	780	-	48 - 61
GR	12	235	24" - 26" - 28"	1.5/8"	1300	150 - 250	790	815	-	57 - 66
GR	14	235	24" - 26" - 28"	1.5/8"	1550	150 - 250	855	880	-	67 - 77
GR	16	235	24" - 26" - 28"	1.5/8"	1750	150 - 250	985	1020	-	76 - 88
GR	18	235	24" - 26" - 28"	1.5/8"	2000	150 - 250	1185	1220	-	86 - 99
GR	20	235	24" - 26" - 28"	1.5/8"	2250	150 - 250	1250	1290	-	96 - 110
GR	24	235	24" - 26" - 28"	1.5/8"	2700	150 - 250	1390	1430	-	115 - 132
GR	28	235	24" - 26" - 28"	1.5/8"	3200	150 - 250	1910	1970	-	135 - 154
GRP	12	235	24" - 26" - 28"	1.5/8"	1300	150 - 250	980	1020	-	57 - 66
GRP	24	235	24" - 26" - 28"	1.5/8"	1550	150 - 250	1060	1090	-	67 - 77
GRP	16	235	24" - 26" - 28"	1.5/8"	1750	150 - 250	1160	1200	-	76 - 88
GRP	18	235	24" - 26" - 28"	1.5/8"	2000	150 - 250	1410	1450	-	86 - 99
GRP	20	235	24" - 26" - 28"	1.5/8"	2250	150 - 250	1460	1500	-	96 - 110
GRP	24	235	24" - 26" - 28"	1.5/8"	2700	150 - 250	1755	1810	-	115 - 132

Baldan reserves the right to modify any technical specifications without prior notice.
The technical specifications it´s approximate and informed by regular conditions of work.

04 - ASSEMBLY

01 - Check the parts list that is inside the package box.

02 - Before starting the assembly, place protective gloves.

03 - The assembly must always start with the disc section.

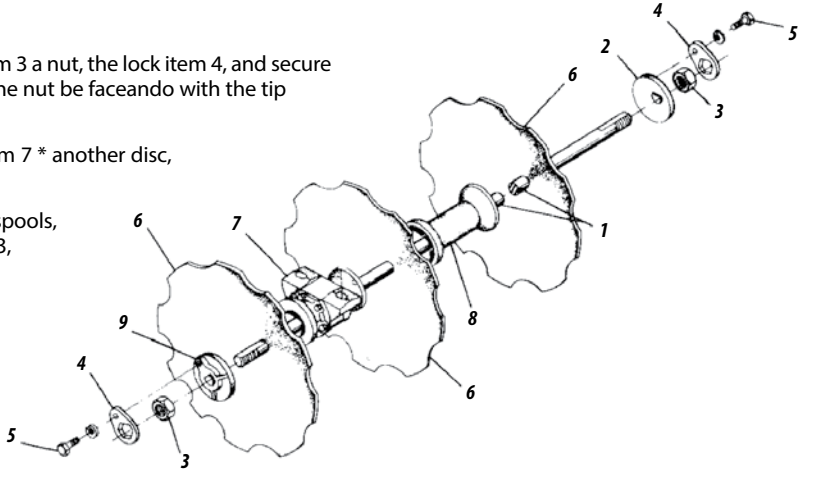
04 - Place on axis item 1, figure 2 washer concave item 2, item 3 a nut, the lock item 4, and secure with the nut section 5 as shown in Figure 2. Note that the nut be faceando with the tip of the shaft.

05 - Place on shaft item 1, one disc item 6, one bearing* item 7 * another disc, the spool item 8 and so on as shown in Figure 2.

06 - 6 - When the set is complete with all discs, bearings and spools, place the convex washer item 9, the other nut item 3, with a key grip with the whole set until firm.

07 - Then, putting all the discs and tighten the nut item 3, by impacts. When it is about getting the maximum tighten, adjust the lock item 4 with covex washer, always tightening the nut to match the holes, fix them through the nut item 5.

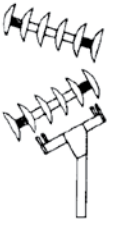
Figure 2



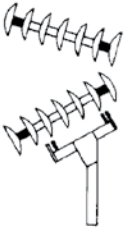
08 - The figure 3, show the sections discs assembly for each harrow model.

Figures 3

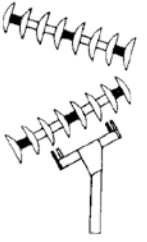
GR 10 Discs



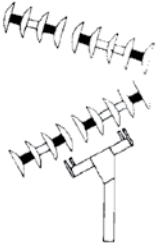
GR/GRP 12 Discs



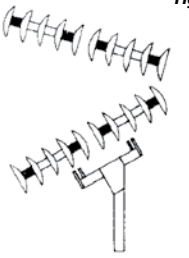
GR/GRP 14 Discs



GR/GRP 16 Discs



GR/GRP 18 Discs



GR/GRP 20 Discs

09 - Assemble the frame with the section of the disc and check that the mounting bracket bearings (shoe) should be face to the concavity of the discs, as shown in Figure 04.

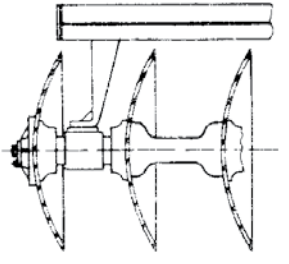
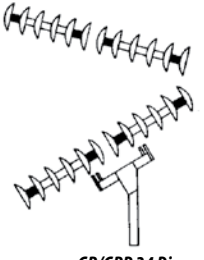
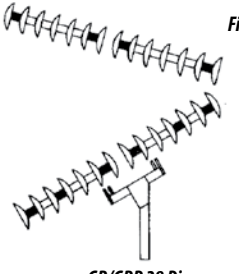


Figure 4

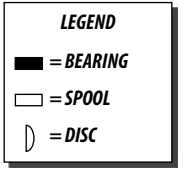
Figures 3



GR/GRP 24 Discs

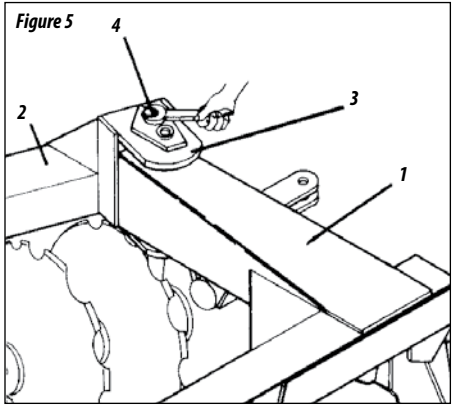


GR/GRP 28 Discs



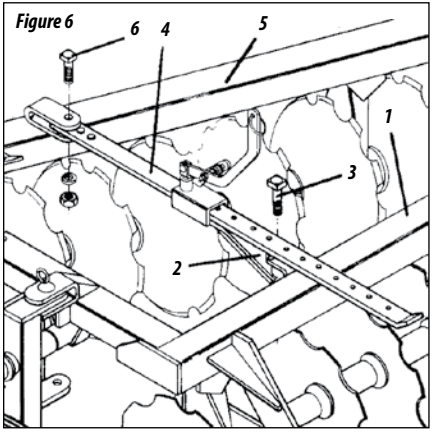
JOIN OF FRONT AND REAR FRAMES

10 - Attaching the front frame section item 11 in the rear frame section item 2, through the axis of join item 3, locking it with the bolt lock item 4, as shown in Figure 05.



ASSEMBLY OF REGULATION OPENNING SET OF DISC HARROW WITH 10,12, 14 AND 16 DISCS

11 - Place on the front frame item 1, pull handle item 2, with the pin item 3, pass the ruler lock item 4, Through the inner of the handle lock body, joining the rear section item 5 through bolt item 6, as shown the Figure 06.



ASSEMBLY OF REGULATION OPENNING SET OF DISC HARROW WITH 18, 20, 24 E 28 DISCS

12 - Place on the front frame item 1, the front stabilize bar item 3, through the join pin item 4.

13 - Place on rear frame item 2, the rear stabilize bar item 5, through the join pin item 7.

14 - Coupling the front stabilize bar item 3 and rear item 5, through the join pin item 7.

15 - Place the pull handle item 8, on right stabilizer bar, passing the strip lock adjustment item 9, by the inner of the handle lock body, joining it to the rear stabilizer bar through the bolt item 10, as shown in Figure 07.

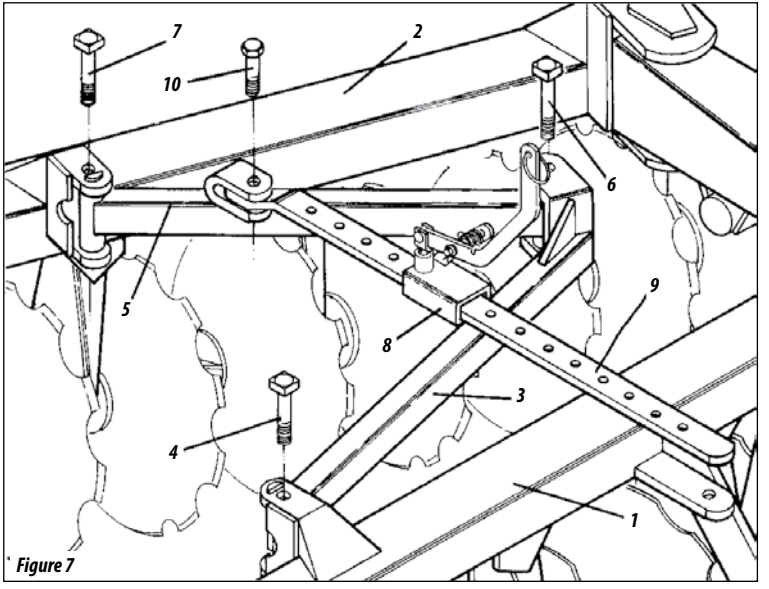


Figure 7

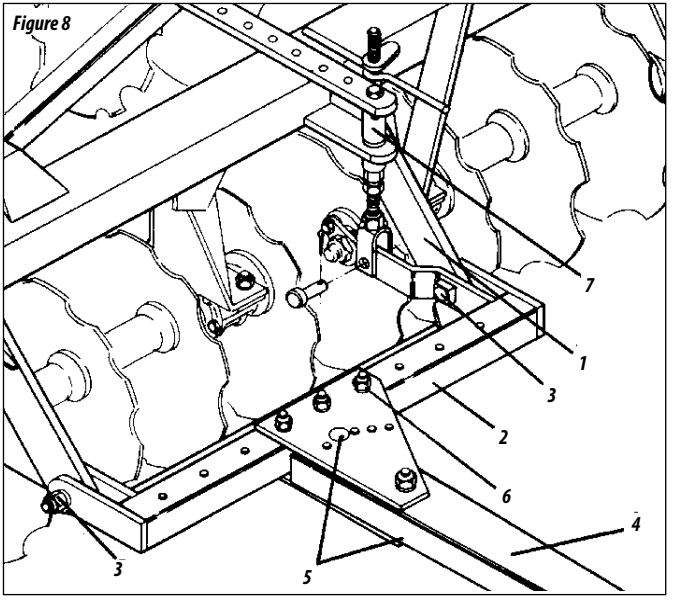
HEAD OF HITCH ASSEMBLY

16 - Place the transversal bar item 2 on front frame item 1 with bolts item 3.

17 - Place the header coupling item 4, joining the transversal bar through the botton plate and top item 5, with screws item 6.

18 - When the harrow has tires, put the handle latch header item 7 on the cross bar item 2 and front frame item 1, as shown in Figure 08.

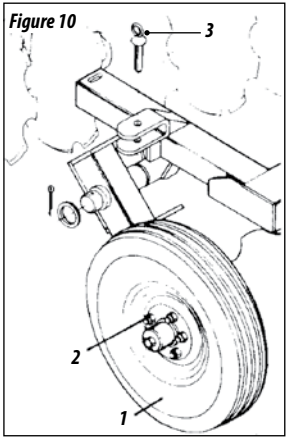
Figure 8



HITCH OF STABILIZER BAR *Figure 9*

19 - The assembly of the stabilizer bars follow the same as harrows without piston, adding the assembly as follows:

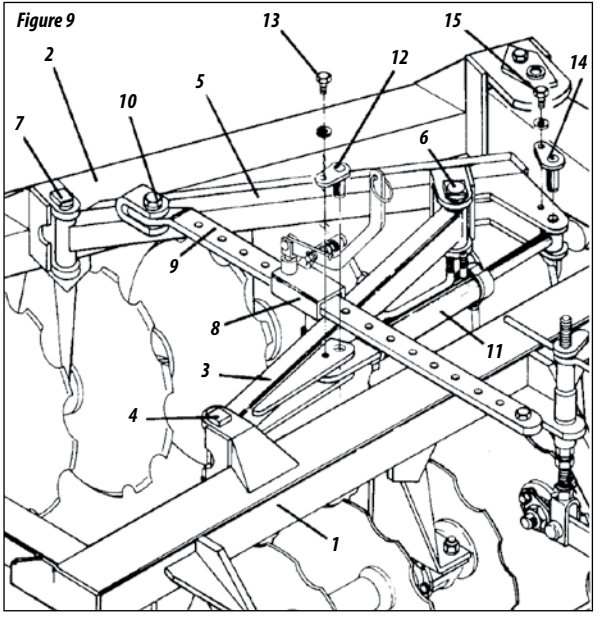
20 - Place the piston item 11, so that the base of the cylinder is placed in front stabilizer bar, item 3, through the pin, item 12, locking it with bolt, item 13, and piston handle fixed to the rear stabilizer bar, item 5 through the pin, item 14, locking with bolt, item 15, as shown in ***Figure 9***.



WHEEL HITCH *Figure 10*

21 - Set the wheel item 1 in the hub, through the nuts item 2.

22 - Place the lock pin wheel item 3 on frame, as shown in ***Figure 10***.



SCRAPER ASSEMBLY

23 - Set the scrapers item 1 in the front and rear frames, with bolts item 3, as shown in Figure 11.

24 - Note in the figure that, in the spacing where the bearings are fixed, there is no needs of scrapers.

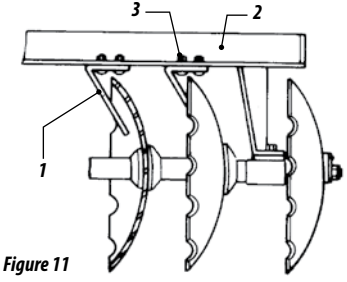


Figure 11

HARROW HITCH

25 - 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 12.

26 - To hitch the harrow, find a safe place and easily accessible, always use low gear at low speed.

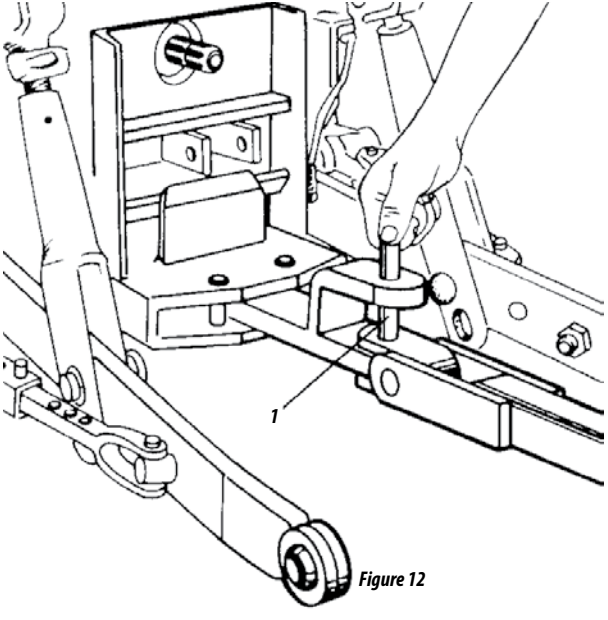


Figure 12

ADJUSTMENT OPENING

01 - To obtain an idel penetration of the discs, the opening of the harrow varies according with the type of soil.

02 - In the land of greater difficulty of penetration increases the opening "A" of harrow, as shown in Figure 13.

03 - In the soft terrain and loose, you must work with a smaller opening.

04 - To open or close the harrow, pull the rope that goes until to the driver, releasing the adjustment of the opening set. To open the harrow, move the tractor forward and backward to close the harrow.

05 - For transport, close the harrow completely.

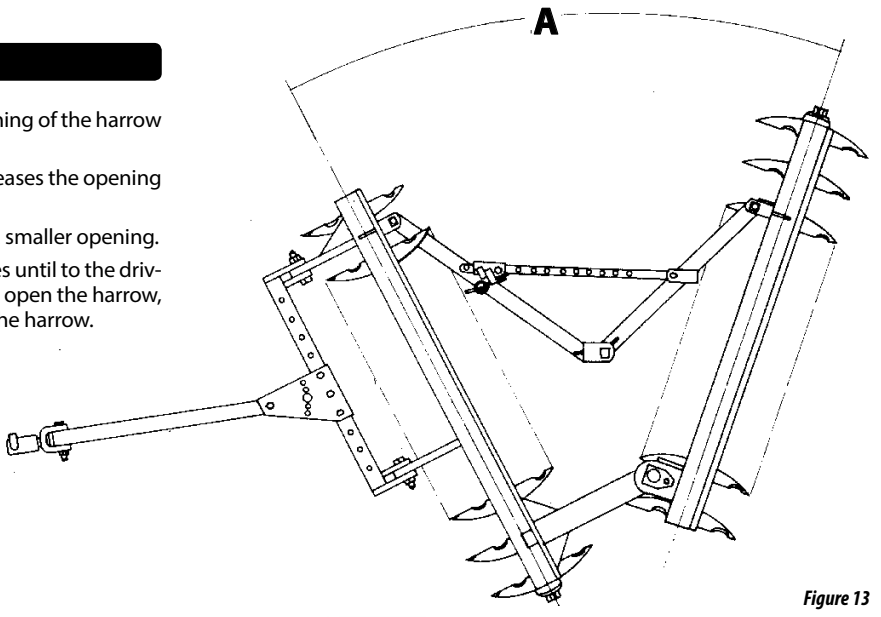


Figure 13

NOTE

Increasing the angle "A", greater penetration.
Decreasing the angle "A", smaller penetration.

LATERAL DISPLACEMENT OF HARROW

06 - This movement should be regulated when the harrow is not giving a perfect finish, so, keeping the tractor track. The harrow should work centralized with the central line of tractor. To do this, move the plates above and below the header to the right or left, as shown in Figure 14.

07 - The header coupling works in the center hole of the upper and lower plates for medium soil, displacing to the other holes change the angle attack of the front section.

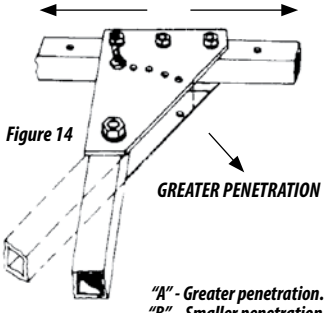


Figure 14

"A" - Greater penetration.
"B" - Smaller penetration.

ADJUSTMENT OF CROSS ON FRONT FRAME

08 - In the front frame are welded the front linkage arms, which has two holes as shown in Figure 15, whose main purpose is the leveling of the harrow header in relation to the bar of the tractor.

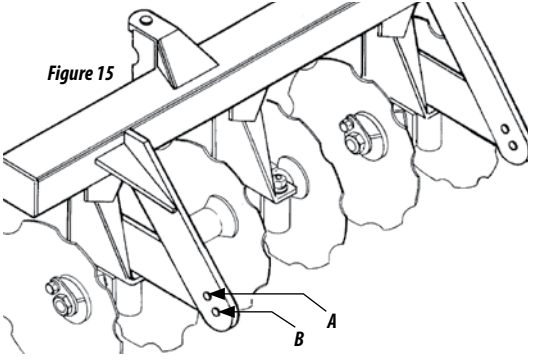


Figure 15

NOTE

When hitched in the top hole the penetration will be greater and consequently in the lower hole, the penetration will be smaller. For harrows with tires, when changing the hole, also change the handle latch header hole.

06 - OPERATIONS

01 - Before start the operations with the harrow, review it completely, retighten 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 16. 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

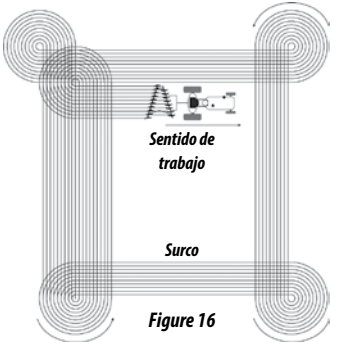
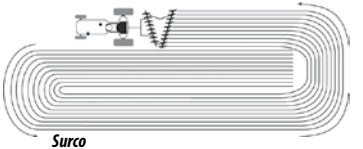


Figure 16

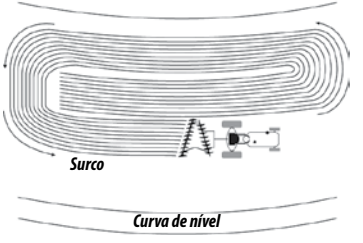
HARROWING TOWARDS INSIDE OUT

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.



TRANSPORT (for harrows with tires)

01 - To transport the harrow, remove the lock item 1 and the pin item 2 that locks the wheel support item 3. Then lower the wheel support item 3 to the ground. Then place the pin item 4 in hole of wheel support item 3 the way that is between the ribs of the wheel hub item 5 locking it.

02 - Then, move the tractor slowly forward until the wheel support item 3 lift the harrow and stay parallel to the lock.

03 - Then, place the pin item 2 and the lock item 1 locking the wheel support item 3. Take off the pin item 4 from the hole of wheel support item 3, unlocking the wheel hub item 5, as shown in the Figure 17.

04 - Before to start the transport, level the harrow adjunting the regulator item 6.

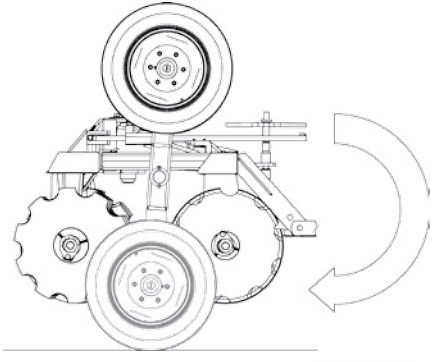
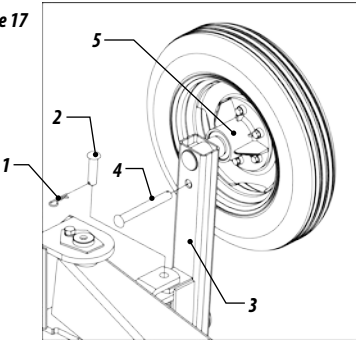
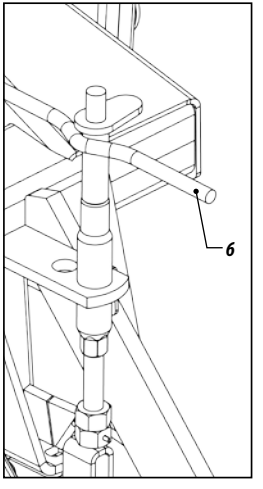


Figure 17





07 - LUBRICATION

01 - Lubrication is essential for good performance and durability of moving parts of the implements.

02 - Before starting work, carefully lubricate all grease points, always checking the relubrication intervals, making sure about the lubricant quality, the efficiency and purity, avoiding to use products contaminated by water, land, etc...

OIL BATH BEARING LUBRICATION

03 - In the first days of work with the harrow, check the oil level from bearings and also the retainers.

04 - Check the oil level each 120 hours of work.

05 - The oil change must be each 1200 hours of work. Use 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.

08 - LUBRICATION POINTS

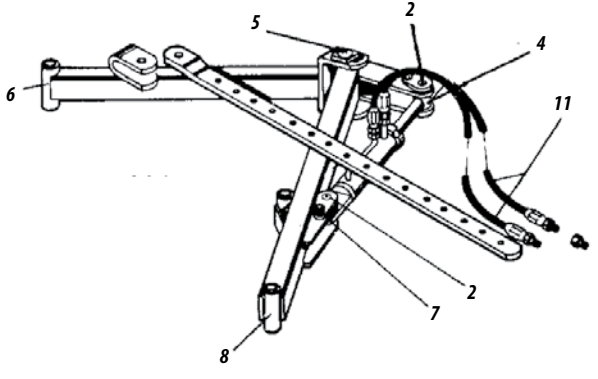
Table 3

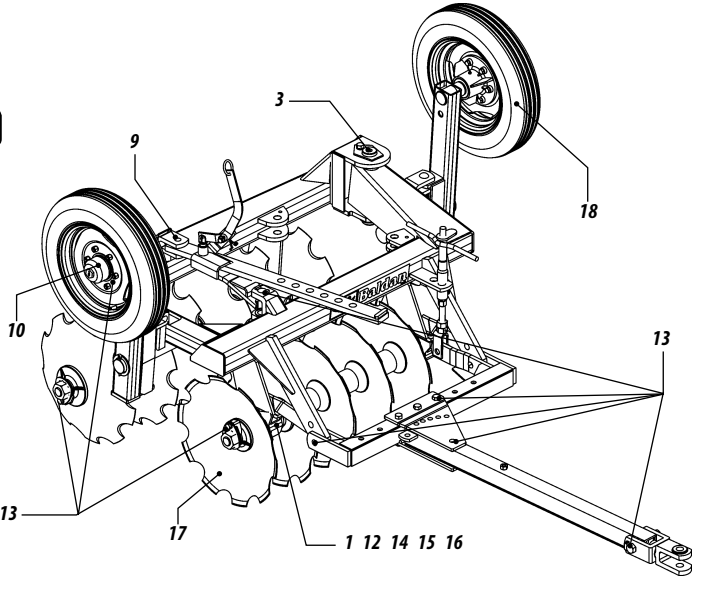
Item	Parts description	Number of lubrication points								Change oil	Lubr. W/ grease	Retight	Replace	Check	Maintenance intervals
		GR 10 Discs	GR/GRP 12 Discs	GR/GRP 14 Discs	GR/GRP 16 Discs	GR/GRP 18 Discs	GR/GRP 20 Discs	GR/GRP 24 Discs	GR 28 Discs						
1	Bearing	4	4	4	6	8	8	8	8		X				12 hours
2	Piston articulation pin	2	2	2	2	2	2	2	2		X				
3	Handle frame	1	1	1	1	1	1	1	1		X				60 hours
4	Piston handle	1	1	1	1	1	1	1	1		X				
5	Stabilizer bar join	1	1	1	1	1	1	1	1		X				
6	Rear stabilizer bar				1	1	1	1	1		X				
7	Piston hitch	1	1	1	1	1	1	1	1		X				
8	Front stabilizer bar	1	1	1	1	1	1	1	1		X				
9	Lock pull	1	1	1	1	1	1	1	1		X				
10	Wheel hub		2	2	2	2	2	2	2						
11	Hydraulic system													X	
12	Bearings oil													X	120 hours
13	Bolts / Nuts											X			
14	Retainers									X					1200 hours
15	Roller												X		1500 hours
16	Discs / Bearings												X		
17	Discs														
18	Tires												X		When necessary

ATTENTION

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

OPENNING SYSTEM WITH HYDRAULIC SYSTEM *(Optional)*





09 - BEARINGS ADJUSTMENTS

- When the bearing shows looseness, adjust them as follows:

01 - Remove the washer item 1 in Figure 20.

02 - Loosen the bolts item 2 and take off the cover item 3.

03 - Remove 1 or 2 joints item 4, from the bearing cover.

04 - Replace the cap and retighten it.

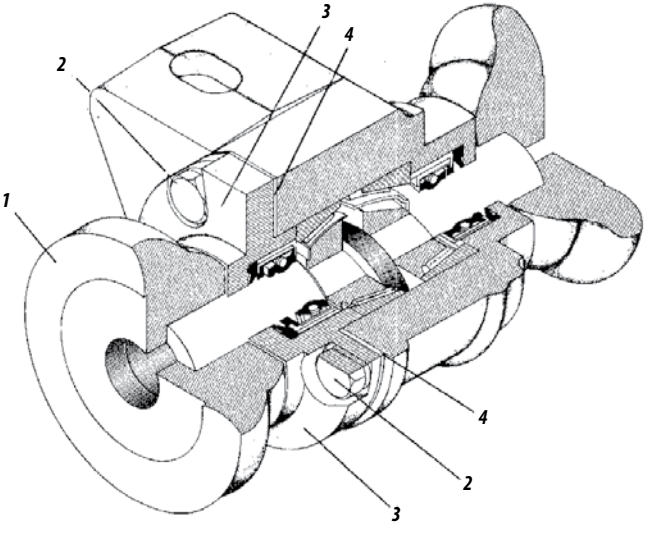
05 - If the loose persists, we can facemills the cover item 3, to increase the regulation, after assembly it the same on bearing with many joints are needed.

06 - The bearing must rotate free, so, without radial or axial clearances.

10 - CLEANING

01 - When the harrow remain inactive for an extended period, make a clean sweep in it, make sure if the ink wear off. If this happend, give an overall coat, use protective and lubricating oil to the harrow completely. Check the discs, give a coat of paint on them and use protective oil.

WARNING *Do not assembly the bearing without joints.*



11 - APPROX PRODUCTION OF GR / GRP HARROWS

- To calculate the approx hourly output of harrows, use the follow:

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

Where:
A = *Area to be worked*
L = *Work width of harrow(meters)*
V = *Average speed tractor (em metros)*
F = *Output factor*
X = *Hectare Value (10.000 m²)*

- ***Ex.: A GR / GRP of 24 discs, how many Ha it will output after 1 hour of work with an average speed of 7 Km per hour?***

A = ?
L = 3,10m
V = 6.000m/h
F = 0,90
X = 10.000m²

$$\frac{A = 3{,}10 \times 6.000 \times 0{,}90}{10.000} = 1{,}67 \text{ Ha/h}$$

12 - APPROX TABLE OF OUTPUT HOURLY

Table 4

Model	Working Width (m)	Average Speed (m/h)	Output Factor	Approx. Output Hectares
GR 10	1,05	6.000	0,90	0,57
GR/GRP 12	1,30	6.000	0,90	0,70
GR/GRP 14	1,55	6.000	0,90	0,84
GR/GRP 16	1,75	6.000	0,90	0,95
GR/GRP 18	2,00	6.000	0,90	1,08
GR/GRP 20	2,25	6.000	0,90	1,22
GR/GRP 24	2,70	6.000	0,90	1,46
GR 28	3,20	6.000	0,90	1,73

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: *6055010533-3*
Revision: *01*
CPT: GR07817

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: _____ / _____ / _____ ***Invoice. Nr:*** _____

NOTE:

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