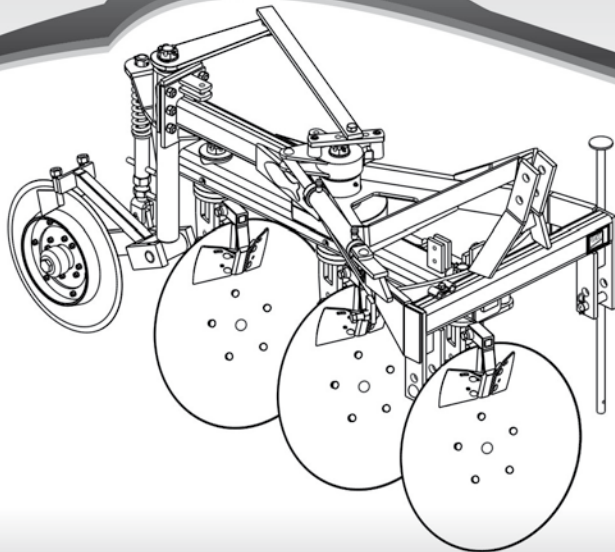


# ARH

## Reversible Hydraulic Plow - Heavy and Light



[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***



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## 01. SAFETY STANDARDS

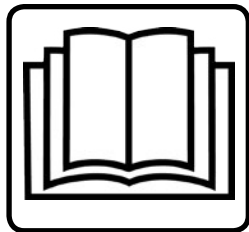


THIS SYMBOL INDICATES IMPORTANT SAFETY WARNING. WHENEVER YOU FIND IT IN THIS HANDBOOK, CAREFULLY READ THE MESSAGE THAT FOLLOWS AND BE AWARE OF THE POSSIBILITY OF PERSONAL INJURY.



### 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.*



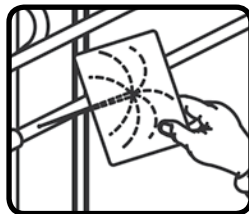
## ATTENTION

- *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 early imbalance, reduce the acceleration, turn the tractor wheels to the side of the terrain slope.
- 11-  Always drive the tractor at speeds compatible with safety, especially when working on uneven ground or slopes, always keep the tractor engaged.
- 12-  When driving the tractor on roads, keep the brake pedals connected and use of safety signs.
- 13-  Do not operate the tractor if its front is light. If there is a tendency to rise, add weights on the front or front wheels.
- 14-  Leaving the tractor, put the selector lever in neutral and pull the parking brake.

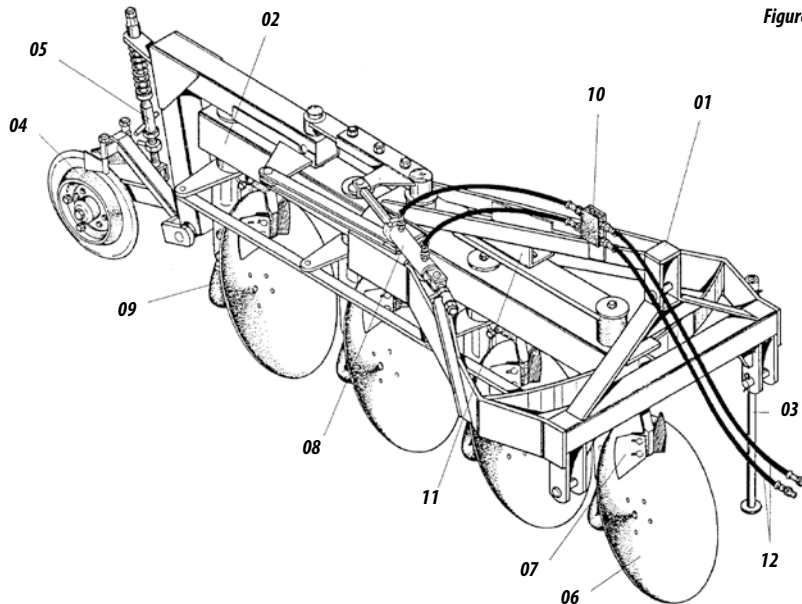


# ARH - REVERSIBLE HYDRAULIC PLOW (HEAVY)

Figure 1

## 02. COMPONENTS

- 01 - Frame
- 02 - Reversible frame
- 03 - Support bracket
- 04 - Guide wheel
- 05 - Guide wheel adjuster
- 06 - Wiper
- 07 - Disc
- 08 - Reversal piston
- 09 - Disc support
- 10 - Valve
- 11 - Reversal support adjuster
- 12 - Hydraulic Hoses



# ARH - REVERSIBLE HYDRAULIC PLOW (LIGHT)

## 03. COMPONENTS

- 01 - Upper frame
- 02 - Support bracket
- 03 - Reversing lever
- 04 - Eccentric sleeve
- 05 - Reversal spring
- 06 - Guide wheel
- 07 - Lower frame
- 08 - Disc support
- 09 - Angle fixing bar
- 10 - Disc

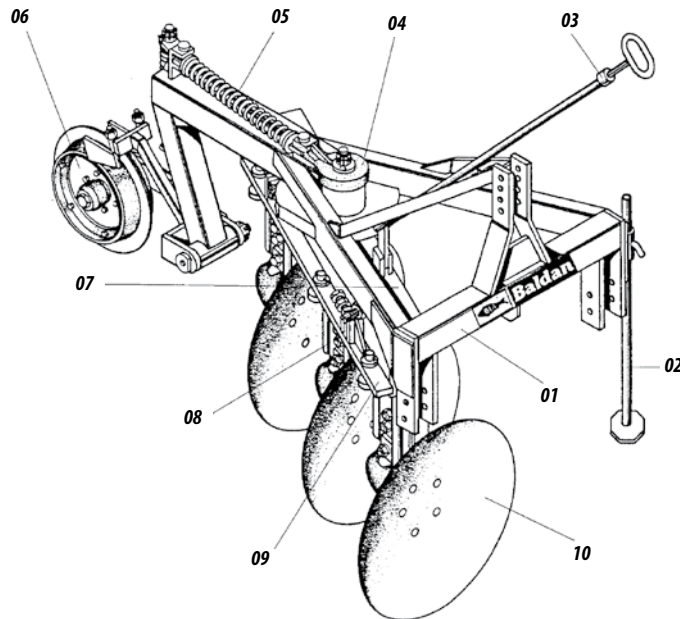


Figure 2

## 04. TECHNICAL SPECIFICATIONS

Table 1

Model	No. of Discs	Disc Diameter (ø)	Disc Spacing (mm)	Working width (mm)	Approx. weight			Required Tractor Power (HP)	Working depth (mm)
					26"	28"	30"		
<b>ARH (Light)</b>	3	26" - 28"	550	750 - 900	550	563	--	61 - 79	250 - 350
<b>ARH (Light)</b>	4	26" - 28"	550	900 - 1100	731	760	--	80 - 100	250 - 350
<b>ARH (Heavy)</b>	3	28" - 30"	610	800 - 100	--	731	741	80 - 100	350 - 400
<b>ARH (Heavy)</b>	4	28" - 30"	610	1000 - 1300	--	925	947	90 - 120	350 - 400
<b>ARH (Heavy)</b>	5	28" - 30"	610	1200 - 1600	--	1082	1100	110 - 150	350 - 400

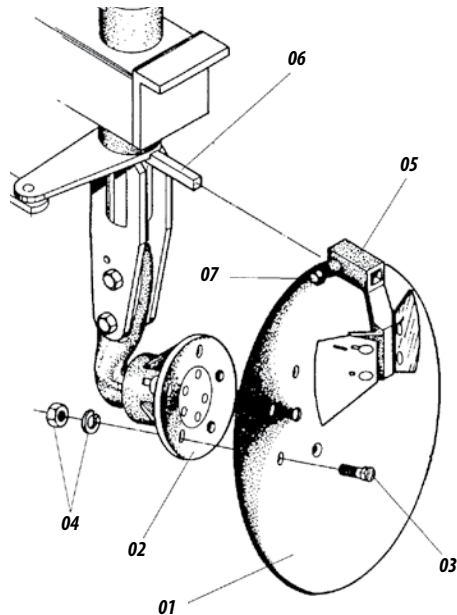
*The Baldan reserves the right to change the specifications of this product without prior notice.*

*The technical specifications are approximate and valid in normal working conditions.*

## 05. ASSEMBLY

- 01 - The reversible plow leaves the factory semi-assembled, requiring only the assembly of discs.
- 02 - Place discs, Item 1 Figure 3, in the hubs, item 2 through scrfews, item 3, nut and washer, Item 4.
- 03 - Place the wipers, item 5 in support, item 6, fixing them through the screws, nuts and pins.

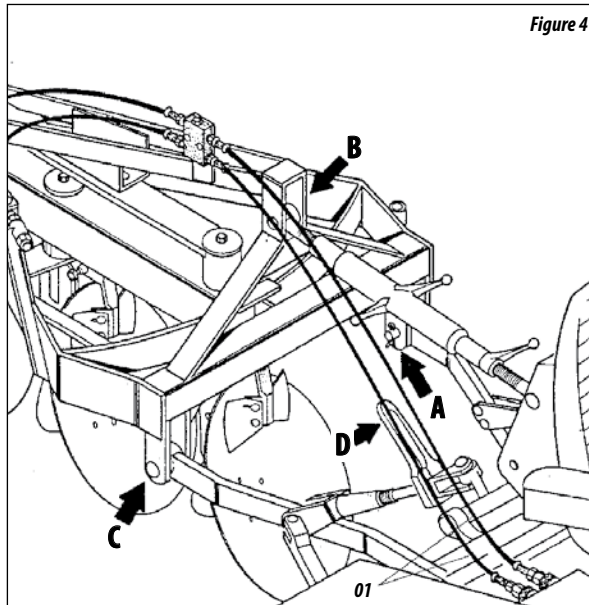
Figure 3



## 06. PLOW COUPLING

- Before coupling the plow to the tractor, ensure that it is prepared to working as follows:

- 01 - *Check if the tractor is equipped with front counterbalance set;*
- 02 - *Ballast wheels, according to specifications of the tractor's manual;*
- 03 - Remove or move aside the tractor's drawbar so that it does not interfere with the disc when preceding the reversal.
- 04 - Couple the tractor's lower left arm to hitch pin "A" of the plow, as shown in figure 4.
- 05 - Engage the 3rd point of the tractor on bracket "B" of the plow.
- 06 - Finally and with the aid of a height adjustment lever "D", engage the tractor's lower right arm on bracket "C" of the implement.
- 07 - By coupling the disc harrow, search for a safe and easily accessible place, always use low gear with low throttle.
- 08 - Attach the hoses (Item 1) to the quick hitch of the tractor. (If the plow is provided with piston).
- 09 - Before connecting or disconnecting the hydraulic hoses, turn off the engine and relieve the pressure of the hydraulic system by moving command levers completely.
- 10 - Make sure that, by relieving the pressure of the system, no one is near the area.



## PLOW CENTRALIZATION

- 01 - To center the plow in relation to the tractor's longitudinal axis, proceed as follows:
- 02 - Align the top hitch of the plow with the 3rd point of the tractor, checking if the distances "D" from the lower arms are equal in relation to tractor tires, as Figure 5. To align, do it through the stabilizers. The lower arms should be leveled in relation to each other.
- 03 - The stabilizers are used as means to maintain the plow in the traction line. They serve to prevent deflection when the plow is operating and to prevent side movement. Therefore, one should leave a little clearance in them so that the plow can go up and down without breaking the stabilizing chains on slopes or when an obstacle is found.

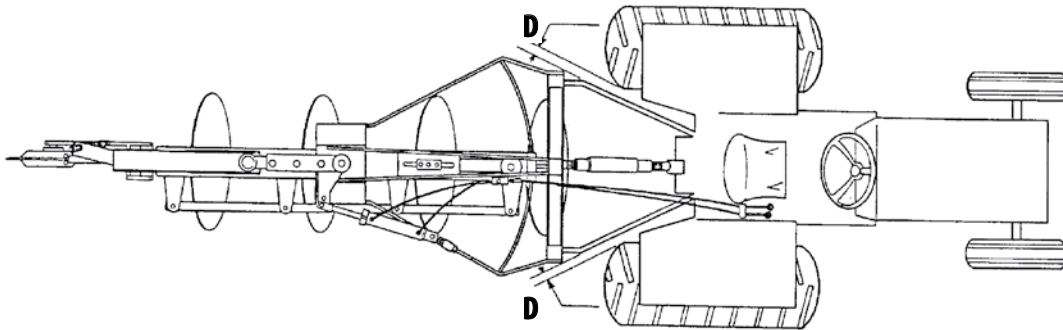


Figure 5



## PLOW LEVELING

- To level the plow in transverse position (width), proceed as follows:  
**01** - The tractor must be on level ground, then, level the plow in the transverse position (width) through the right lower arm of the tractor's hydraulic hitch. Observe the measures "h", which shall be equal on both sides, as Figure 6.

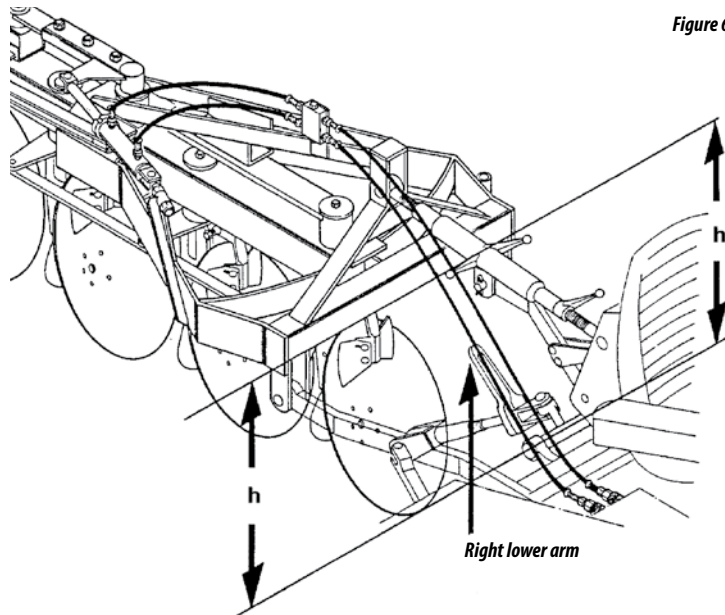
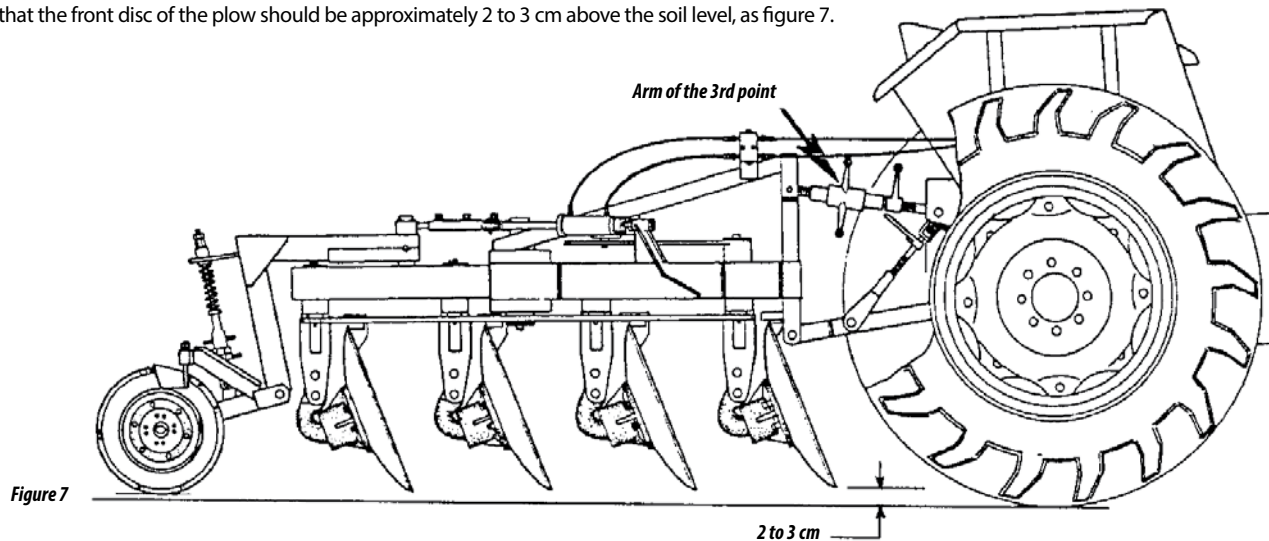


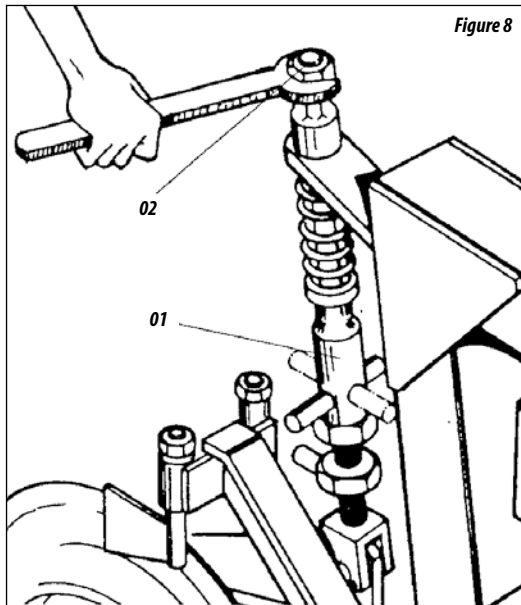
Figure 6

- To level the plow in the longitudinal position (length), proceed as follows:  
02 - The longitudinal leveling (length) is done through the arm of the 3rd point of the tractor.  
03 - Note that the front disc of the plow should be approximately 2 to 3 cm above the soil level, as figure 7.



## 07. ADJUSTMENTS AND OPERATIONS

- 01 - The Reversible Plow is coupled to the tractor hydraulic, which has the ripple control to make the plow lift when the soil presents obstacle or is excessively hard, returning to normal working depth, as soon as the effect stops. In this case, the reaction speed of the hydraulic system should be regulated, so that it cannot be sensitive enough to hinder the penetration of the plow. For further information, refer to the tractor's instruction handbook.
- 02 - The plow depth adjustment is basically controlled by tractor hydraulic so that the plow must be properly adjusted.
- 03 - If, after having leveled and centered the plow and still the desired cutting depth has not been achieved, you must adjust the guide spring pressure. If the spring pressure is excessive, the plow weight is transferred to the guide wheel, remaining penetration difficult. Therefore, you should find the Ideal spring pressure by turning the lever (item 1 - figure 8). The nut, item 2, releases the wheel to touch the ground.
- 04 - For the cutting depth of discs to remain always uniform, the reaction speed of the hydraulic system must be properly adjusted and the operation speed kept constant.



### ADJUSTING THE GUIDE WHEEL (HEAVY)

- 01 - The guide wheel allows greater or lesser penetration of discs and is responsible for the alignment of the tractor-plow set, acting as a rudder, preventing lateral deviations.
- 02 - In soils with excess straw or crop remnants, which hinder the furrow opening, you should reduce the cutting angle on the discs by moving the cursor item 1 Fig. 9 forward.
- 03 - To work in loose soils (soft), you should use a small cutting angle on the discs. In hard soil, the cutting angle of discs must be higher, and the cursor, item 1, may be moved backwards.
- 04 - To increase the cutting width, you must put pin in hole "A", thus decreasing the angle as in Fig. 9. By putting the pin in hole "B", the angle increases and the cutting width decreases, as shown in FIG. 9.

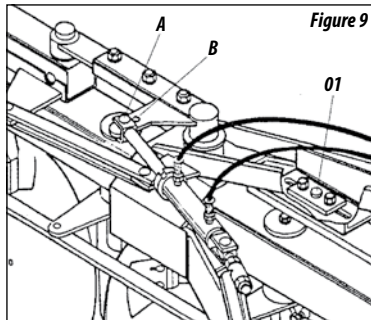


Figure 9

### ADJUSTING THE CUTTING WIDTH (LIGHT)

- 01 - The cutting width is adjusted with the screw item 1 Fig. 10. Moving the screw out, the cutting width increases. To maintain plowing uniformity, the screw should be adjusted, leaving always the same distance between the screw head and its base on both sides.

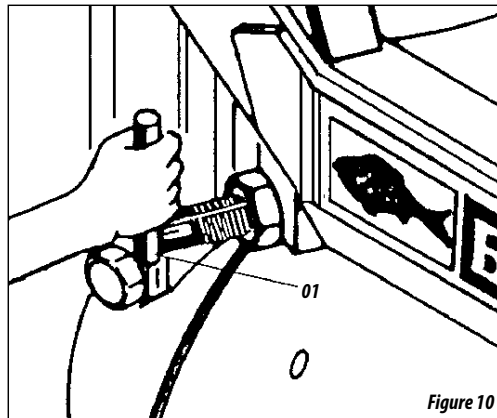


Figure 10

## ADJUSTMENT OF DISCS

- 01 - The cutting angle of discs is adjusted through the screw Item 1 fig.11. Tightening it, the cutting angle decreases, thus allowing greater penetration of discs.
- 02 - On land with high amounts of straw or grass that hinder furrow opening, you should increase the cutting angle by loosening the screw Item 1.
- 03 - To adjust the screw item 1, unlocked when the locknut Item 2 and adjust front and rear screws uniformly, thus obtaining a perfect plowing in both directions.

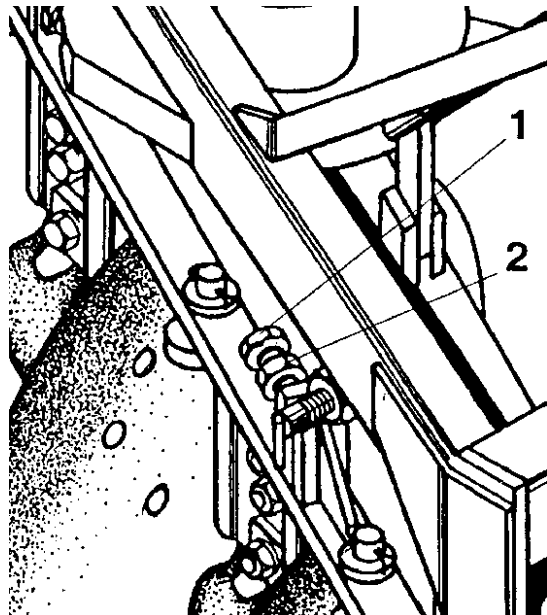


Figure 11

- 04 - The inclination of discs is adjusted by the hole in the hub support. There are 4 adjustments to increase or decrease the depth, 2 for each position of the discs, as figures 12, 13, 14, and 15.
- 05 - Discs in the low position, as figures 12 and 13, suitable for normal and loose soil.
- 06 - Discs in the high position, as Figures 14 and 15, suitable for hard soil
- **NOTE: The plow is factory set at position A, A1, figure 14.**

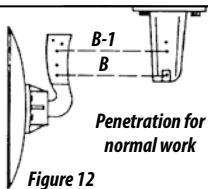


Figure 12

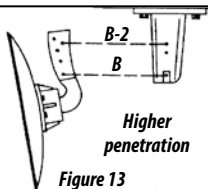


Figure 13

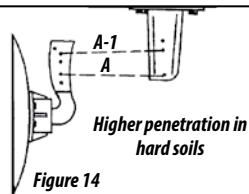


Figure 14

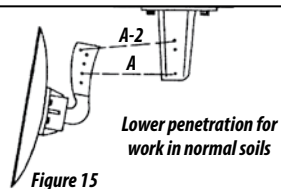


Figure 15

## OPERATIONS

- 01 - As the Reversible Plough throws land to the same side, it is recommended for plowing along contour lines, in the construction of terraces or contour cords. On sloping land and irrigated crops, it prevents the formation of dead furrows, facilitating the transport of water and subsequent work with farming implements.
- 02 - To start operation, make sure that the plow is perfectly leveled in longitudinal and transverse directions. The engine speed should be between 1500 and 1800 rpm. Depending on the soil, proper gear is used for better finishing of the plowed soil. It is recommended to always keep the same speed between 6 and 7 km / h, so that the work surface and depth are uniform. Constant speed also determines leveling of the plowed surface and uniform plowing.

## DURING WORK, PROBLEMS MAY ARISE IN PLOWING, SUCH AS:

### **IF THE PLOW DOES NOT PENETRATE THE SOIL, PROCEED AS FOLLOWS:**

- Make sure the plow is properly leveled both longitudinally and transversally;
- Check the adjustment of the guide wheel;
- Check the position of the ripple control, it should not be in a very sensitive position;
- Check the position of the discs, they shall be adjusted to the type of soil being worked;
- Reduce the speed.

### **IF DISCS ARE FULL OF LAND, PROCEED AS FOLLOWS:**

- Reduce the cutting angle to increase their rotation;
- Adjust the wipers or check the possibility of removing them;
- Increase the speed.

### **IF THE TRACTOR TENDS TO GET OFF OF THE FURROW TOWARDS THE PLOWED SOIL:**

- Make sure the plow is properly leveled longitudinally, the first disc may be deeper than the others;
- Check the cutting width of the first disc, which may be greater than the others, and also to gauge the rear wheels of the tractor;
- Increase the pressure of the guide spring, check its plate inclination regulation;
- Make sure that the stabilizers are adjusted.

### **IF THE TRACTOR TENDS TO GET OFF OF THE FURROW TOWARDS THE PLOWED SOIL, PROCEED AS FOLLOWS:**

- Make sure the plow is properly leveled longitudinally, the first disc may have a depth less than the others;
- Check the cutting width of the first disc, which may be greater than the others, and also to gauge the rear wheels of the tractor.

### **IF PLOWING IS UNEVEN, PROCEED AS FOLLOWS:**

- Check the position of the ripple control, the reaction speed of the hydraulic should be appropriate to the type of soil being worked;
- Check the position of the arm of the tractor 3rd point, refer to the tractor's handbook for further information about its most appropriate position;
- Keep working speed constant.

- During work, the front wheel of the tractor should be in the center of the furrow and parallel to its wall. This procedure avoids wear on the tire and tractor. If the distance between the front tire and the furrow wall is constant, there will be a uniform cut for all discs.
- Upon leaving the furrow, avoid the guide wheel to drag on the ground, to do so, do the maneuver before and after the reversal of discs.

## 08. MAINTENANCE

- 01 - Make a daily checking of the conditions and tightening of screws, nuts and pins.
- 02 - Discs should always be sharp and clean. If there is excessive wear, they should be replaced.

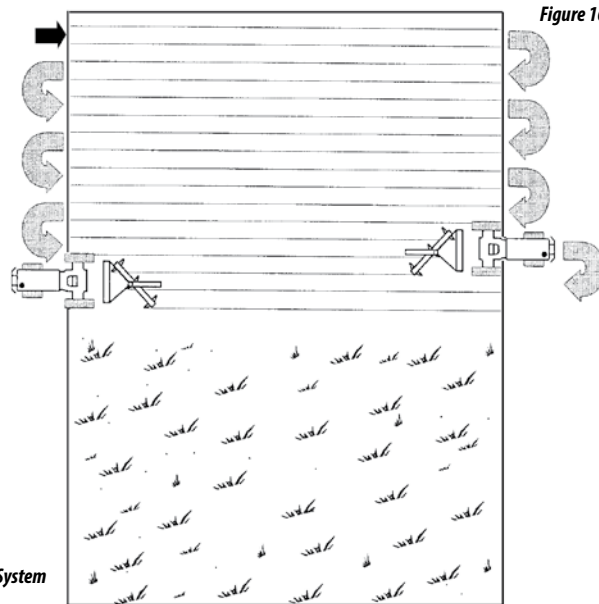


Figure 16

Work System

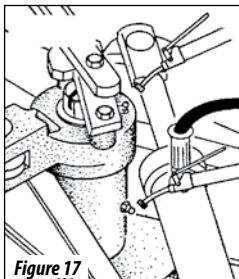


## 09. LUBRICATION

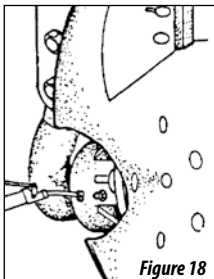
- 01 - Lubrication is essential for a good performance and durability of the moving parts of your plow.
- 02 - Before start working, carefully lubricate all grease fittings, always observing re-lubrication intervals, making sure about the quality of the lubricant, as its efficiency and purity, avoiding the use products contaminated by water, dirt, etc.
- 03 - Before lubrication, clean all grease fittings with a clean, lint-free cloth and replace those that are damaged, if any.
- 04 - Lubricate grease fittings every:
  - A - 8 hours;
  - B - 35 hours.

### LUBRICATION POINTS

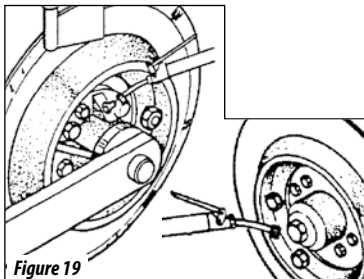
*Excentric sleeve*



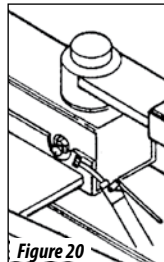
*Disc hub*



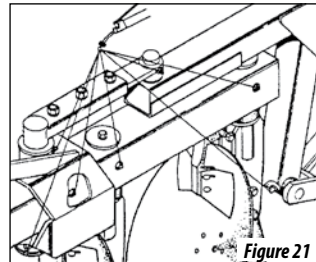
*Guide wheel*



*Guide wheel upper support*



*Guide wheel lower support  
Lower and upper support screws and sleeves*



## 10. CLEANING

- 01 - When assembling or disassembling any portion of the plow, employ methods and appropriate tools.
- 02 - When the plow is to remain idle for a long period, make a clean sweep in the same, make sure the paint is not worn. If so, take a full coat, use protective oil all over the plow. check the discs, give a coat of paint and protective oil in them.

## 11. STORAGE

- 01 - At the end of each work, the plow should be cleaned and inspected, checking for worn or broken parts. Apply a layer of oil on all surfaces that may present or drying or corrosion.
- 02 - Check the entire plow and paint it when necessary. Store in a flat surface in a protected location away from animals and children.

## 12. APPROXIMATE PRODUCCION

- 01 - To calculate the approximate hourly production of the hydraulic 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

X = Hectare - 10,000 m<sup>2</sup>

- **Example:** Using a 4-disc plow, how many Hectare or Bushel it will produce in an hour of work at an average speed of 7km / h?

- A = ?
- L = 1.60m
- V = 7.000m/h
- F = 0.90
- X = 10.000 m<sup>2</sup>

$$A = \frac{1,00 \times 7.000 \times 0,9}{10.200}$$

$$A = 0,63 \text{ Ha/h}$$



## TABLE OF APPROXIMATE HOURLY PRODUCTION OF REVERSIBLE PLOWS

Model	Cut width (m)	Average speed (m/h)	Production Factor	Approximate Production
				Hectáreas
ARH - 3 (Light)	0,75 to 0,90	7.000	0,90	0,47 to 0,56
ARH - 3 (Heavy)	0,80 to 1,00	7.000	0,90	0,50 to 0,63
ARH - 3 (Heavy)	1,00 to 1,30	7.000	0,90	0,63 to 0,81
ARH - 3 (Heavy)	1,20 to 1,60	7.000	0,90	0,31 to 1,00

Table 2

01 - If you want to know the time that will be spent working in an area of known value, simply divide the value of this area by the hourly production of your plow.

• **Example:** What is the time "X" that will be spent with a 4-disc plow to produce 35 hectares at an average speed of 7km / h?

• Area value: 35 hectares

• Hourly production of the 4-disc plow: 0.63 ha/h

$$\text{Therefore: } \frac{35 \text{ ha}}{0.63 \text{ ha/h}} = 55.5 \text{ hours}$$

02 - The daily production can vary due to factors that alter the pace of work, such as humidity and soil hardness, land slopes and inadequate adjustments.

03 - Factor F is to be considered on the working position, maneuvers, efficiency drops after long periods of work, etc



### NOTE

The production factor value is different from one implement to another, and is directly related to soil type, size, area, operator, etc.. In this case, we use as an example F of 90%.

### 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



The image shows a Baldan identification tag with the following information:

**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**  
EDITING CATALOGS AND MANUALS

Code: 6055010478-7  
Revision: 01  
CPT: ARH12817



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



6 0 5 5 0 1 0 4 7 8 7



**Baldan**



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