Instruction Manual

GRH

Hydraulic Reversible Harrow

BALDAN

Presentation

We thank you for your preference and congratulate you on the excellent choice you have just made, as you have purchased a product manufactured with **BALDAN IMPLEMENTOS AGRÍCOLAS S/A.**

This manual will guide you through the procedures that are necessary from its acquisition to its procedures for use, safety and maintenance.

BALDAN guarantees that it has delivered this implement to the reseller complete and in perfect condition.

The retailer was responsible for the care and upkeep during the period it was in its possession, as well as for assembly, re-tightening, lubrication and general overhaul.

During technical delivery, the reseller must advise the user customer on maintenance, safety, their obligations in the event of technical assistance, strict observance of the warranty and reading of the instruction manual.

Any request for technical assistance under warranty should be made to the reseller from whom it was purchased.

We reiterate the need to carefully read the warranty certificate and comply with all the items in this manual, as this will extend the life of your implement.

Instruction Manual

GRH

Hydraulic Reversible Harrow

BALDAN IMPLEMENTOS AGRÍCOLAS S/A.
CNPJ Corporate Taxpayer Number: 52.311.347/0009-06
Registration Est: 441.016.953.110

Scan the QR Code on your device's nameplate and access this instruction manual online.

BALDAN

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▪ Baldan Warranty

A **BALDAN IMPLEMENTOS AGRÍCOLAS S/A**, guarantees the normal operation of the implement to the reseller for a period of six (6) months from the date of delivery on the resale invoice to the first end consumer.

During this period, **BALDAN** undertakes to repair defects in material and/or manufacturing under its responsibility, with labor, freight and other expenses being the responsibility of the reseller.

During the warranty period, any defective parts must be requested and replaced by the local dealer, who will send the defective part to **BALDAN** for analysis.

When such procedure is not possible and the reseller's ability to resolve the problem has been exhausted, the reseller will request support from **BALDAN Technical Assistance**, using the specific form distributed to dealers.

After **BALDAN's** Technical Assistance has analyzed the replaced items and concluded that, they are not under warranty, then the reseller will be responsible for the costs related to the replacement; as well as the costs of material, travel including accommodation and meals, accessories, lubricants used, and other expenses arising from the call to Technical Assistance, and **BALDAN** is authorized to make the respective billing on behalf of the resale.

Any repairs made to the product that is within the warranty deadline by the reseller will only be authorized by **BALDAN** upon prior presentation of a budget describing the parts and labor to be executed.

This term does not apply to products that have been repaired or modified by officials who do not belong to the **BALDAN** dealer network, or to the application of non-genuine parts or components to the user's product.

This warranty shall become null and void when it is established that the defect or damage is the result of improper use of the product, failure to follow the instructions or the inexperience of the operator.

It is agreed that this warranty does not cover tires, polyethylene tanks, cardans, hydraulic components etc., which are equipment guaranteed by their manufacturers.

Manufacturing and/or material defects, the subject of this warranty term, will not, under any circumstances, constitute a reason for termination of the purchase and sale contract, or for compensation of any nature.

BALDAN reserves the right to change and/or improve the technical characteristics of its products, without prior notice, and without obligation to do so with previously manufactured products.

▪ General Information

• To the owner

A BALDAN IMPLEMENTOS AGRÍCOLAS S/A, shall not be held liable for any damage caused by an accident arising from the improper or incorrect use, transportation or storage of its improper or incorrect storage of your implement, whether due to the negligence and/or inexperience of any person.

Only people who have full knowledge of the tractor and implement should transport and operate them.

BALDAN shall not be held liable for any damage caused by unforeseeable situations or situations outside the normal use of the implement..

Incorrect handling of this equipment can result in serious or fatal accidents. Before putting the equipment into operation, carefully read the instructions in this manual. Make sure that the person responsible for the operation is instructed in correct and safe handling. Also make sure that the operator has read and understood the product's instruction manual.

⚠ ATTENTION

NR-31 - SAFETY AND HEALTH AT WORK IN AGRICULTURE, LIVESTOCK FARMING, FORESTRY, LOGGING, AND AQUACULTURE.

The purpose of this Regulatory Standard is to establish the precepts to be observed in the organization and working environment, in order to make the planning and development of agricultural, livestock, forestry, logging and aquaculture activities compatible with occupational safety and health and the environment.

MR. OWNER OR OPERATOR OF THE EQUIPMENT.
Read and comply carefully with NR-31.

For more information, visit the website and read NR-31 in full.
http://portal.mte.gov.br/legislacao/normas-regulamentadoras-1.htm

▪ Safety standards

• To the operator

THIS SYMBOL INDICATES AN IMPORTANT SAFETY WARNING. IN THIS MANUAL, WHENEVER YOU COME ACROSS IT, READ THE FOLLOWING MESSAGE CAREFULLY AND BE AWARE OF THE POSSIBILITY OF PERSONAL INJURY.

⚠ ATTENTION

Read the instruction manual carefully to learn the recommended safety practices.

⚠ ATTENTION

Only start operating the tractor when properly seated and with a fastened seat belt.

⚠ ATTENTION

Do not transport people on the tractor or in or on the equipment.

⚠ ATTENTION

There is a risk of serious injury from tipping over when working on slopes.
Do not use excessive speed.

⚠ ATTENTION

Do not operate the tractor if the front lacks enough ballast for the rear equipment. If it tends to lift, place weights or ballasts to the front of the machine or front wheels.

⚠ ATTENTION

Before carrying out any maintenance on your equipment, make sure it is properly stopped. Avoid being run over.

▪ Safety standards

ATTENTION

FOLLOW ALL THE RECOMMENDATIONS, WARNINGS AND SAFE PRACTICES RECOMMENDED IN THIS MANUAL, UNDERSTAND THE IMPORTANCE OF YOUR SAFETY. ACCIDENTS CAN LEAD TO DISABILITY OR EVEN DEATH. REMEMBER, ACCIDENTS CAN BE AVOIDED!

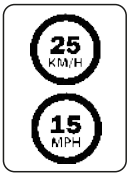
ATTENTION

Do not make adjustments while the GRH is running.
When carrying out any work on the GRH, switch off the tractor first.
Use suitable tools.

ATTENTION

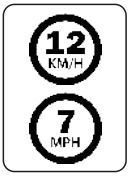
Always keep access and work areas clean of residue such as oil or grease, as they can cause accidents.

ATTENTION



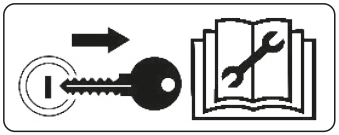
When transporting the GRH, do not exceed a speed of 25 Km/h or 15 MPH, so as to avoid the risk of damage and accidents.

ATTENTION



When working with the GRH, do not exceed a speed of 12 Km/h or 7 MPH, so as to avoid the risk of damage and accidents.

ATTENTION



Remove the ignition key before carrying out any maintenance on the GRH.
Protect yourself from possible injury or death caused by an unforeseen GRH ignition.
If the GRH is not properly hitched, do not start the tractor.

ATTENTION

Always keep away from the GRH's active elements (discs), as they are sharp and can cause accidents.
When carrying out any work on the discs, wear safety gloves on your hands

▪ Safety standards

⚠ ATTENTION

Before starting work or transporting the GRH, check that there are no people or obstructions near it.

⚠ ATTENTION

Improperly disposing of waste affects the environment and ecology, as it will be polluting rivers, canals or soil.

Find out the correct way to recycle or dispose of waste.

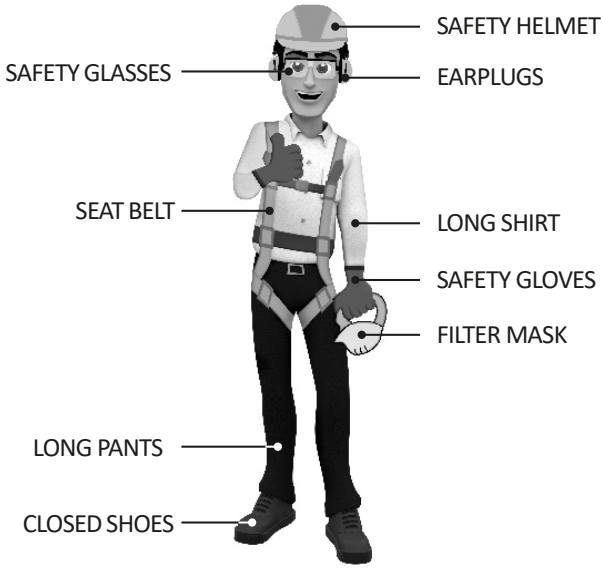
PROTECT THE ENVIRONMENT!

▪ Safety standards

• PPE equipment

ATTENTION | **DO NOT WORK WITH THE GRH WITHOUT FIRST PUTTING ON THE PPEs (SAFETY EQUIPMENT). IGNORING THIS WARNING COULD CAUSE DAMAGE TO YOUR HEALTH, SERIOUS ACCIDENTS OR DEATH.**

When carrying out certain procedures with the **GRH**, wear the following PPE (Safety Equipment):



IMPORTANT

Safety practices must be carried out at all stages of working with the GRH, thus avoiding accidents such as the impact of objects, falls, noises, cuts and ergonomics, i.e. the person responsible for operating the GRH is subject to internal and external damage to their body.

NOTE | **All PPE (safety equipment) must have a certificate of authenticity.**

▪ Warnings

⚠ When operating the GRH, do not allow people to stand too close to or on it.

⚠ Never stand near a GRH in operation; there is an imminent risk of trampling and lacerations.

⚠ Wear PPE when carrying out any maintenance work.

⚠ Don't wear clothes that are too loose, as they could get tangled in the GRH.

⚠ When starting the tractor engine, be properly seated in the operator's seat and aware of the complete knowledge of the correct and safe handling of both the tractor and the GRH. Always put the gearshift lever in the neutral position, disconnect the PTO control gear and put the hydraulic controls in the neutral position.

⚠ Do not run the tractor engine in an enclosed space without adequate ventilation, as the exhaust fumes are harmful to your health.

⚠ When maneuvering the tractor to hitch the GRH, make sure you have the necessary space and that no one is too close, always maneuver at idle speed and be prepared to brake in an emergency.

⚠ Do not make adjustments while the GRH is running.

⚠ When working on slopes, proceed with caution and always try to maintain the necessary stability. If you start to feel unbalanced, reduce acceleration, turn the wheels to the side of the slope and never lift the GRH.

⚠ Always drive the tractor at speeds that are compatible with safety, especially when working on rough terrain or slopes, always keep the tractor coupled.

⚠ When driving the tractor on roads, keep the brake pedals connected.

⚠ Do not operate the tractor with a light rear end. If the rear has a tendency to lift, add more weight to the rear wheels.

⚠ When leaving the tractor, put the gearshift lever in neutral and apply the parking brake. Never leave the GRH hitched to the tractor in the raised position of the hydraulic system.

⚠ Any maintenance on the GRH must be carried out with it stopped and the tractor switched off.

⚠ Do not drive on highways, especially at night. Use warning signs for the entirety of the route.

⚠ If you need to travel with the GRH on the roads, check with the traffic authorities.

⚠ Do not allow people to use the GRH who have not been trained, i.e. who do not know how to operate it correctly.

▪ Warnings

⚠ Do not transport or work with the GRH near obstacles, rivers or streams.

⚠ People may not be transported in self-propelled machines and implements.

⚠ Alterations to the original characteristics of the GRH are not authorized, as they may alter safety, operation and affect service life.

⚠ Read all the safety information in this manual and on the GRH carefully.

⚠ Read or explain all the procedures in this manual to an operator who cannot read.

⚠ Always check that the GRH is in perfect working order. In the event of any irregularity that may interfere with the operation of the GRH, have it serviced before any work or transportation is carried out.

⚠ Maintenance and especially inspection in GRH risk zones should only be carried out by a trained or qualified worker, observing all the safety guidelines. Before starting maintenance, disconnect all drive systems from the GRH.

⚠ Periodically check all the components of GRH before using it.

⚠ Depending on the equipment used and the working conditions in the field or maintenance areas, precautions are necessary. Baldan has no direct control over precautions, so it is the owner's responsibility to put safety procedures into practice while working with the GRH.

⚠ Check the minimum tractor power recommended for each GRH model. Only use a tractor with power and ballast compatible with the load and topography of the terrain.

⚠ When transporting the GRH, travel at speeds suitable for the terrain and never exceed 25 km/h, this reduces servicing and consequently increases the useful life of the GRH.

⚠ Alcoholic beverages or certain medications can cause a loss of reflexes and alter the operator's physical condition. Therefore, never operate the GRH while using these substances.

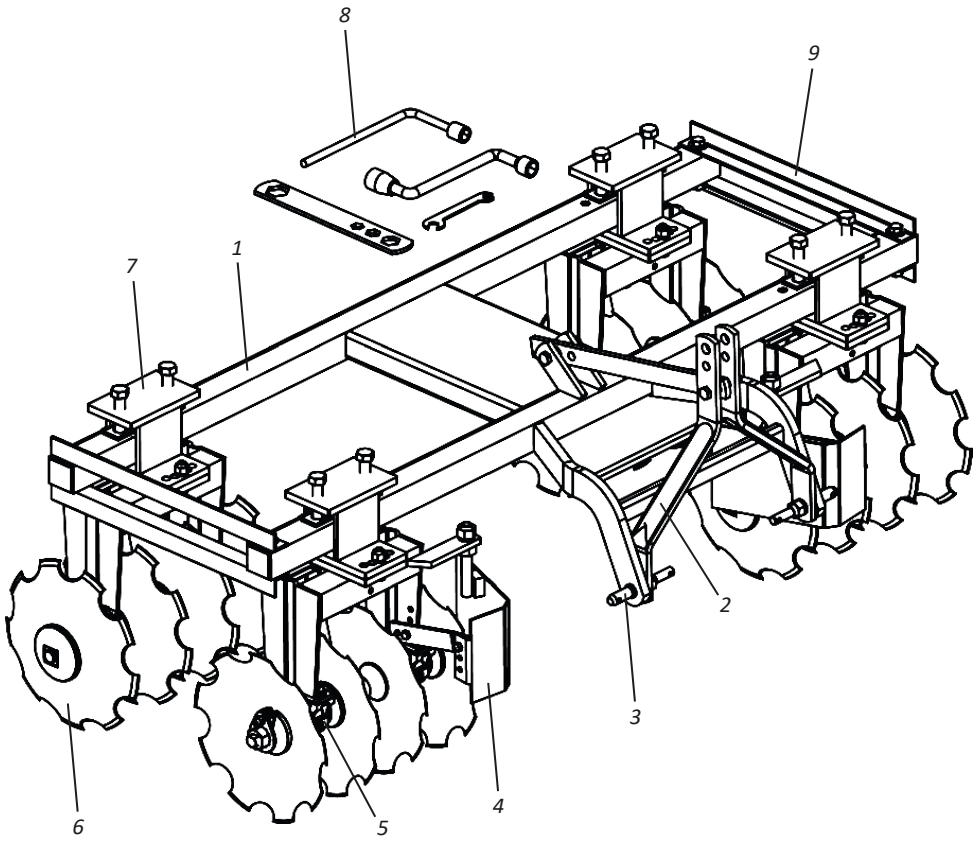
⚠ Read or explain all the procedures in this manual to the user who cannot read.

If you have any questions, please contact After Sales.
Phone: 0800-152577 / E-mail: posvenda@baldan.com.br

▪ Components

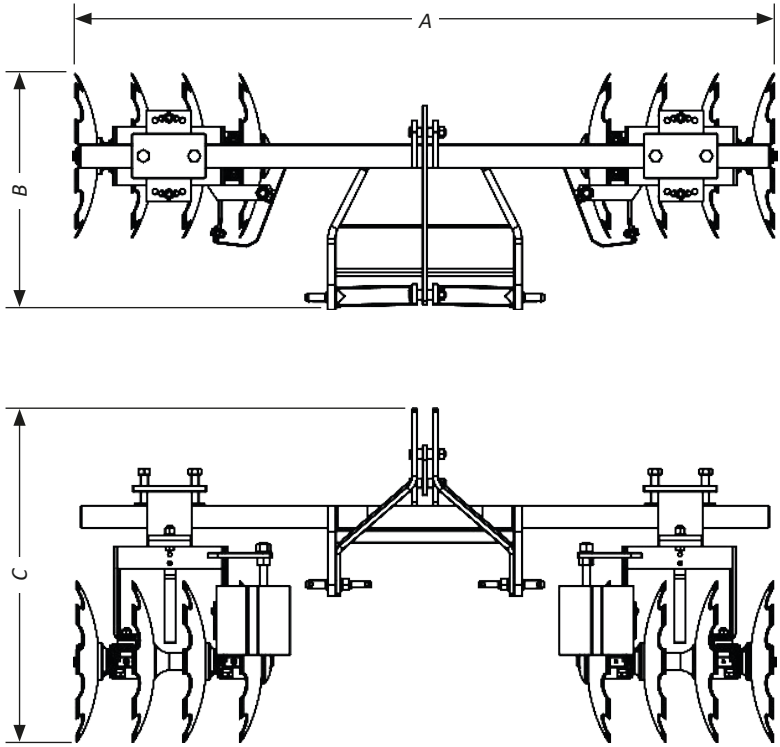
• GRH - Hydraulic Reversible Harrow

1. Chassis
2. Hitch header
3. Pin
4. Disc protection
5. Bearing
6. Discs
7. Discs holder
8. Keys
9. Frame fixing plate



▪ Dimensions

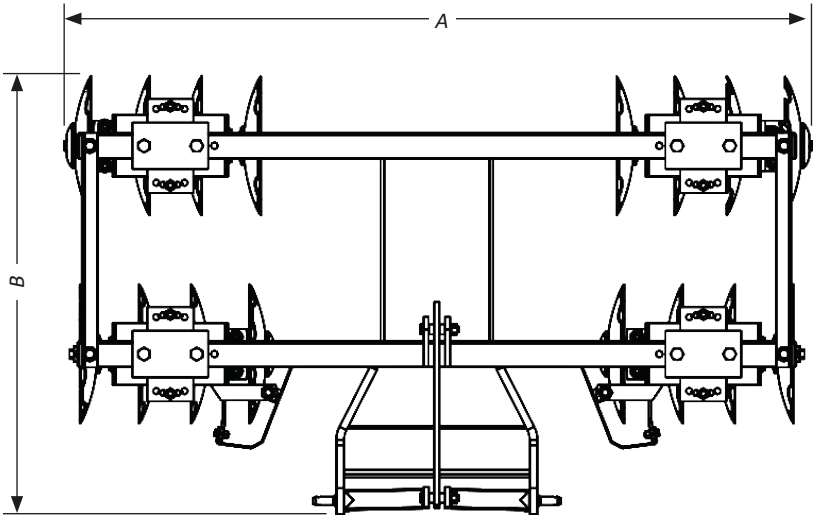
• GRH - 6 / 8 Discs

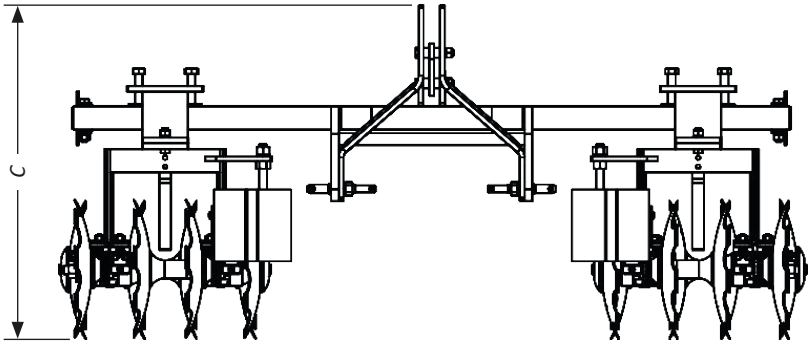


Model	Nr of Discs	Measurement A (mm)	Measurement B (mm)	Measurement C (mm)
GRH	6	2360	754	1074
	8	2426	754	1074

▪ Dimensions

• GRH - 12 / 16 Discs





Model	Nr of Discs	Measurement A (mm)	Measurement B (mm)	Measurement C (mm)
GRH	12	2360	1437	1074
	16	2454	1437	1074

▪ Specifications

• GRH - Hydraulic Reversible Harrow

Model	Nr of Discs	Working width (mm)		Shaft diameter (ø)	Disc spacing (mm)	Approximate weigth (Kg)			Tractor power (HP)
		Minimum	Maximum			18"	20"	22"	
GRH	6	1300	2300	1" (square)	185 (friction bearing)	250	260	303	40 - 50
	8	1400	2600			267	280	331	40 - 50
	12	1300	2300			485	505	570	50 - 66
	16	1400	2600			523	550	628	50 - 66
GRH	6	1300	2300	1.1/4" (round)	175 (oil or grease bearing)	273	283	326	40 - 50
	8	1400	2600			296	309	360	40 - 50
	12	1300	2300			553	573	638	50 - 66
	16	1400	2600			656	592	670	50 - 66

Disc diameter (ø) ..... 18" - 20" - 22"
Working depth (mm) ..... 40 - 150

Baldan reserves the right to amend and/or improve the technical characteristics of its products, without prior notice, and without obligation to do so with previously manufactured products. The technical specifications are approximate and are given under normal working conditions.

INTENDED USE OF GRH

- The **GRH** was developed to work in sugarcane plantations and other similar areas, where it acts in the so-called "loin break" operation, leaving the land in special conditions for mechanized harvesting. Its main feature is its versatility, being able to work on both sides of the plant and adjustable to various spacings.
- The **GRH** should only be driven and operated by a properly trained operator.

UNAUTHORIZED USE OF GRH

- To avoid damage, serious accidents or death, DO NOT transport people on any part of the **GRH**.
- You may NOT use the **GRH** to attach, tow or push other implements or accessories.
- The **GRH** must NOT be used by an inexperienced operator who does not know all the driving, control and operating techniques.

▪ Assembly

The **GRH** leaves the factory disassembled. To assemble it, follow the instructions below:

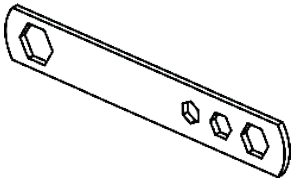
⚠ The assembly of the **GRH** must be installed by the resale, using people who are trained, enabled and qualified for this job.

⚠ Before starting to assemble the **GRH**, look for an ideal location, where it is easy to identify the parts and assemble them.

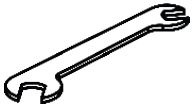
⚠ Do not wear baggy clothes, as they may get tangled in the **GRH**.

• Set of keys

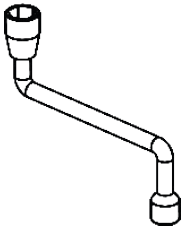
When assembling, disassembling or servicing the **GRH**, use the wrench set supplied with the harrow. The wrench set consists of:



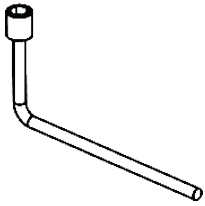
KEY FOR HEX NUT FROM 1.1/4" - 1" - 3/4" - 5/8"



KEY FOR HEX NUT FROM 3/8" - 1/2"



"L" KEY FOR HEX NUT FROM 3/4" - 1"



"L" KEY FOR HEX NUT FROM 5/8"

⚠ ATTENTION **If a wrench is lost or broken, immediately acquire another one. Always use original Baldan keys.**

▪ Assembly

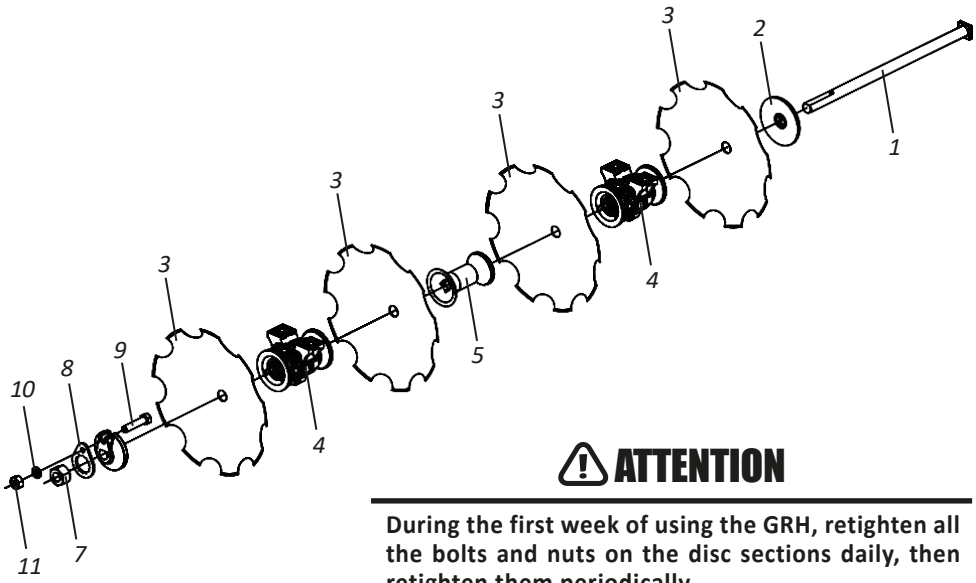
• Assembling the disc section

When starting to assemble the **GRH**, always start with the disc assembly. To do this, proceed as follows:

01 - Place on the shaft (1), concave thrust washer (2), disc (3), bearing (4), another disc (3), separator reel (5) and so on

02 - When the assembly is complete with all the discs, bearings and separator reel, fit the convex thrust washer (6), nut (7) and lock (8), tightening with the key until the whole assembly is secure.

03 - Once this is done, chock the set of discs and tighten the nut (7) through impacts. When you have almost reached maximum tightness, adjust the lock (8) with the convex washer (6), always tightening the nut (7) until it matches the hole and secure it with the screw (9), spring washer (10) and nut (11).



ATTENTION

During the first week of using the GRH, retighten all the bolts and nuts on the disc sections daily, then retighten them periodically.

IMPORTANT

Check the right side of the separator spools and bearings, according to the concavity of the discs.

NOTE

On the GRH with 6 and 12 discs, the disc sections do not have a separator reel, as shown on pages 22 and 23.

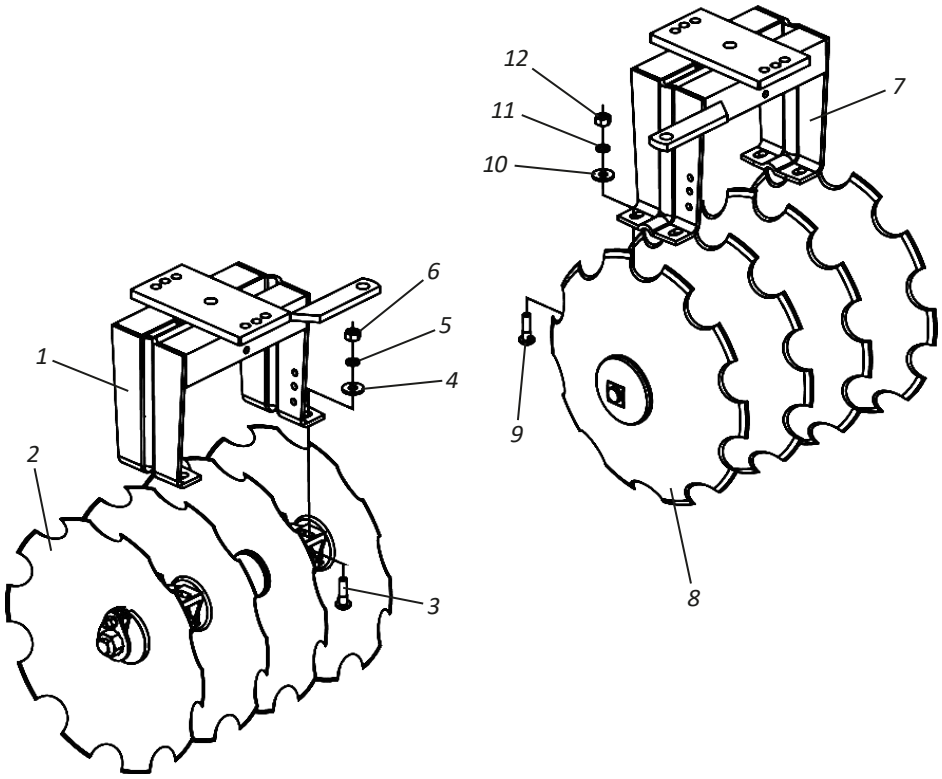
▪ Assembly

• Assembly of the axle fixing brackets

To mount the axle fixing brackets, proceed as follows:

01 - Attach the right axle fixing bracket (1) to the disc section (2) using the screws (3), flat washers (4), spring washers (5) and nuts (6).

02 - Then attach the left axle bracket (7) to the disc section (8), securing it using the screws (9), flat washers (10), spring washers (11) and nuts (12).



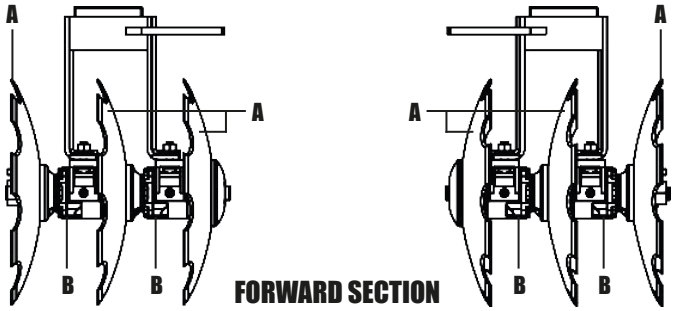
ATTENTION **At the end of assembly, check that the shoes of the right and left mounting brackets face the concavity of the discs.**

NOTE **The expressions “right” and “left” are called looking behind the grid.**

▪ Assembly

• Assembly of the disc sections - GRH 6 discs

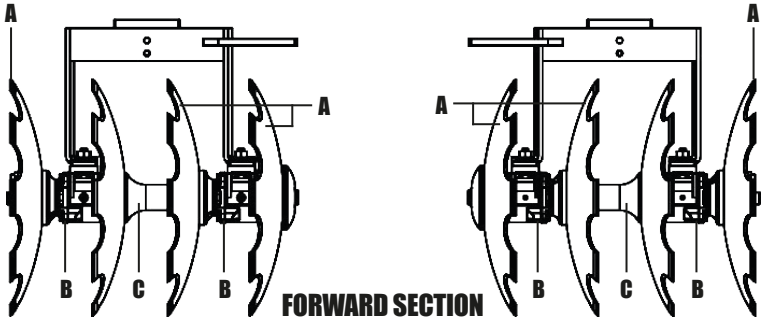
Check below the assembly of the **GRH 6 discs** sections.



CAPTION:	A = DISC B = BEARING

• Assembly of the disc sections - GRH 8 discs

Check below the assembly of the **GRH 8 discs** sections.

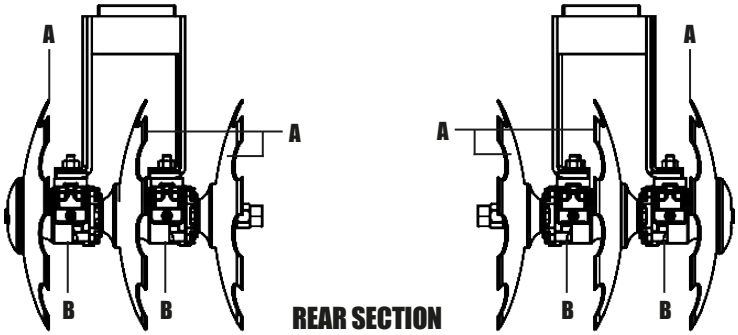


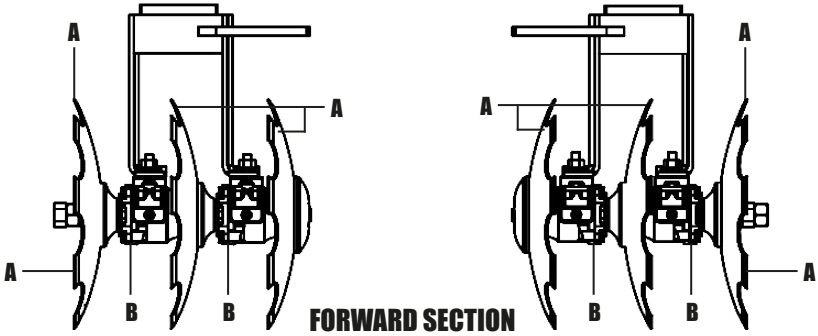
CAPTION:	A = DISC B = BEARING C = REEL

▪ Assembly

• Assembly of the disc sections - GRH 12 discs

Check out the assembly of the **GRH 12 disc** sections below.



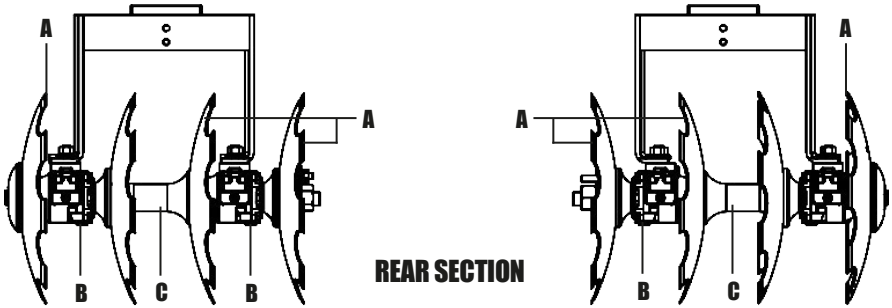


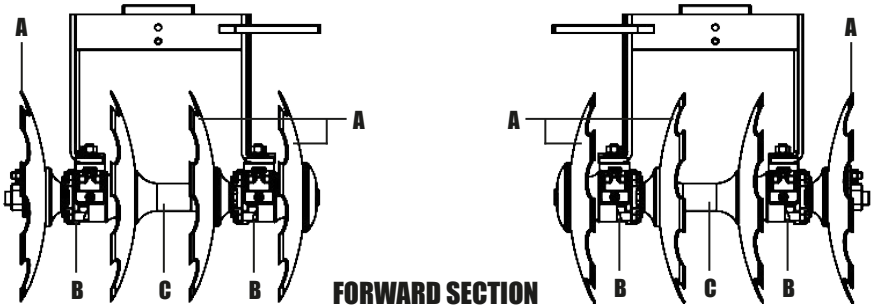
CAPTION:	A = DISC B = BEARING C = REEL

▪ Assembly

• Assembly of the disc sections - GRH 16 discs

Check out the assembly of the **GRH 16 disc** sections below.





CAPTION:	A = DISC B = BEARING C = REEL

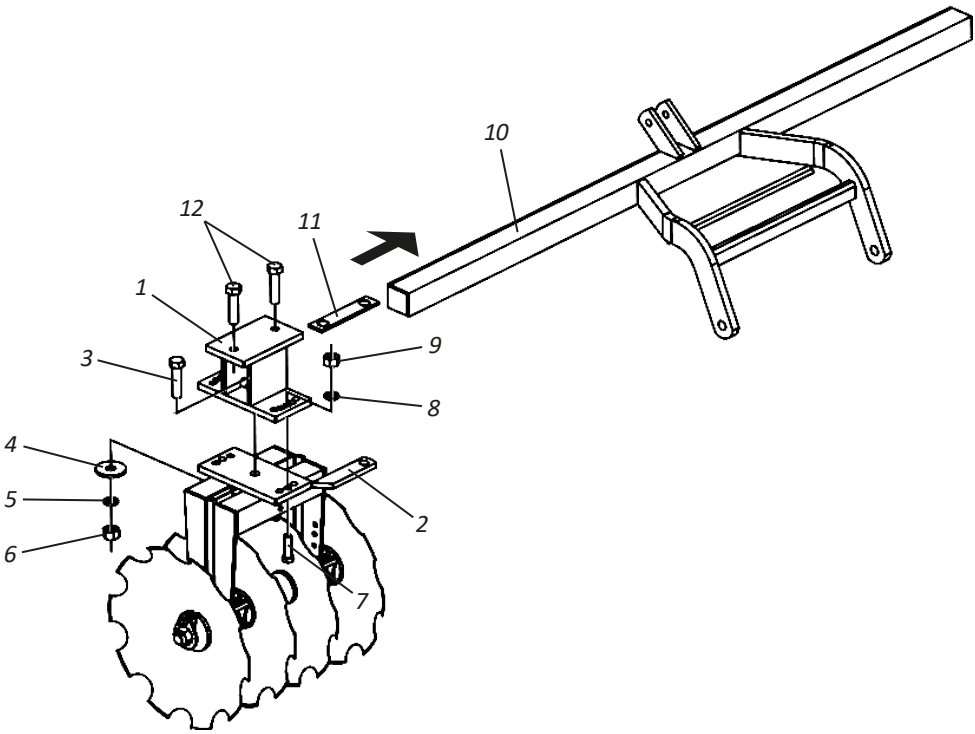
▪ Assembly

• Assembly of the reversible brackets and axle fixing brackets

To mount the reversible brackets and the shaft fixing brackets to the frame, proceed as follows:

01 - Attach the reversible bracket (1) to the shaft fixing bracket (2) using the screw (3),flat washer (4), spring washer (5), nut (6) and screws (7), spring washers (8), nuts(9).

02 - Then insert the reversible bracket (1) into the frame (10) and place the grooved plate (11) between the reversible bracket (1) and the frame (10), securing it with the set screws (12).



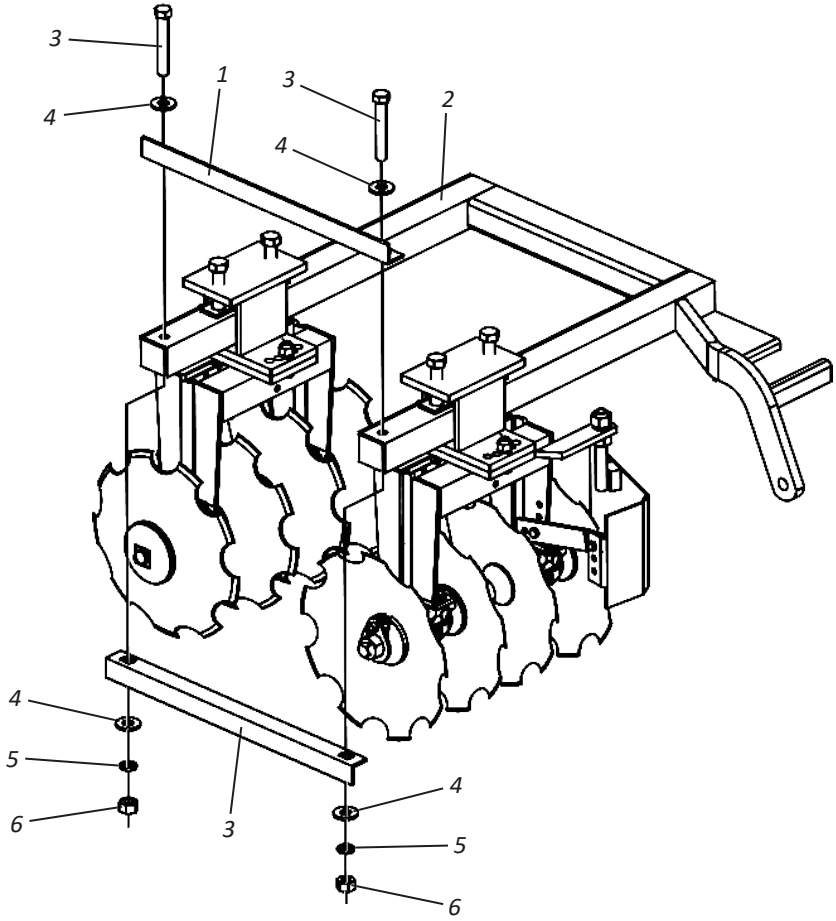
NOTE **When you have finished, repeat the procedure for assembling the other reversible brackets (1) and the axle fixing brackets (2).**

▪ Assembly

• Assembly of the frame fixing bracket

For the **GRH** with **12** and **16** discs, assemble the frame fixing bracket as follows:

01 - Attach the plate (1) to the top of the frame (2) and the plate (3) to the bottom of the frame using screws (3), flat washers (4), spring washers (5) and nuts (6).



▪ Assembly

• Assembly of the guards and wipers

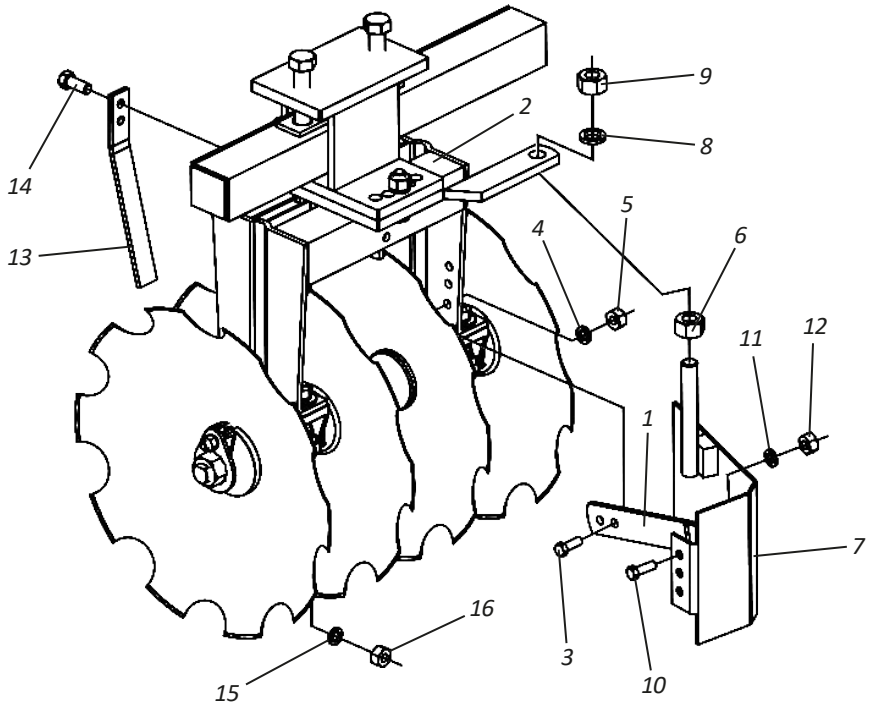
To attach the guards and wipers to the axle mounting brackets, proceed as follows:

01 - Attach the plate (1) to the axle fixing bracket (2) using the screw (3), spring washer (4) and nut (5).

02 - Then attach the nut (6) to the guard (7) and secure the guard (7) to the axle fixing bracket (2) using the spring washer (8) and nut (9).

03 - Then attach the plate (1) to the guard (7) using the screw (10), spring washer (11) and nut (12).

04 - Finish by attaching the wiper (13) to the shaft fixing bracket (2) using the screws (14), spring washers (15) and nuts (16).



NOTE **When you have finished, repeat the assembly procedure for the other axle mounting brackets (2).**

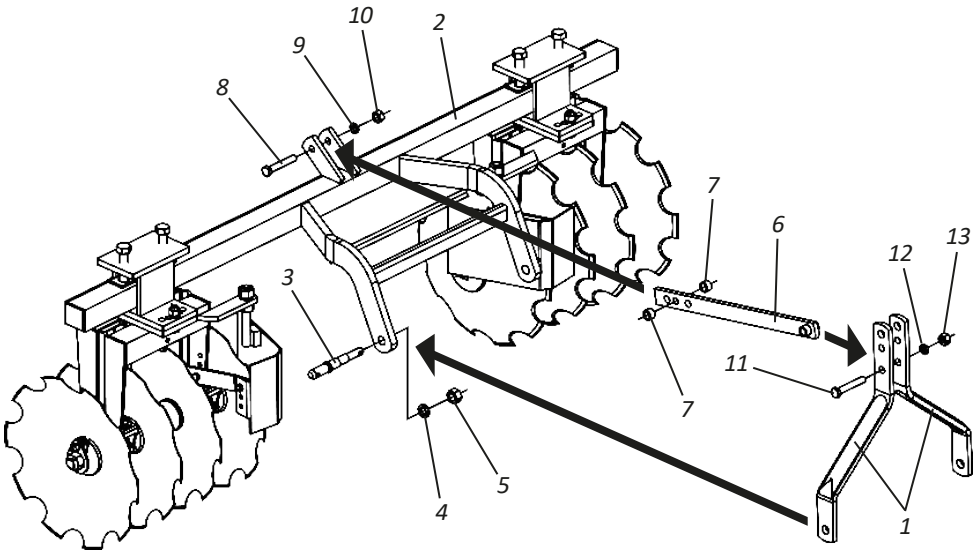
▪ Assembly

• Assembly of the coupling head

To assemble the header, proceed as follows:

01 - Attach the header plates (1) to the frame (2) using the hitching pins (3), spring washers (4) and nuts (5).

02 - Then attach the stabilizer bar (6) to the frame (2) using the bushings (7), bolt (8), spring washer (9) and nut (10) and between the header plates (1) using the bolt (11), spring washer (12) and nut (13).



▪ Hitch

• Harrow Hitch

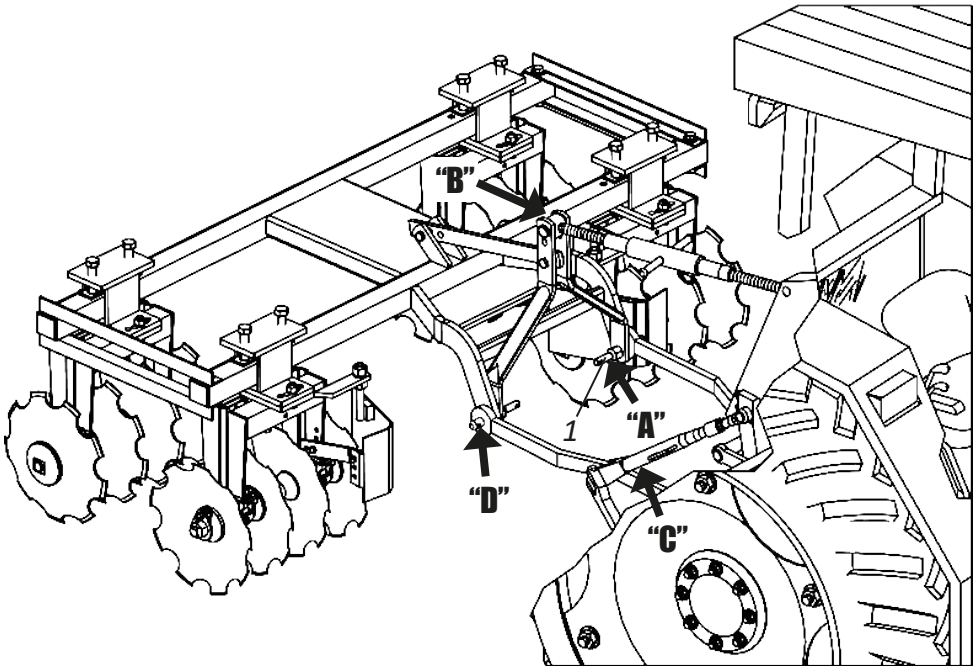
To engage the **GRH** on the tractor, proceed as follows:

01 - Slowly approach the **GRH** tractor in reverse, paying attention to the application of the brakes. Use the hydraulic position control lever when approaching the **GRH**, leaving the lower left arm at the level of the **GRH** hitch.

02 - Hitch the lower left arm of the tractor onto the **"A"** bracket by means of the hitching pin (1) of the **GRH**.

03 - Hitch the tractor's 3rd point to the **GRH's "B"** bracket.

04 - Finally, with the aid of the adjusting lever **"C"**, hitch the lower right arm of the tractor onto the support **"D"** of the **GRH**.



⚠ ATTENTION

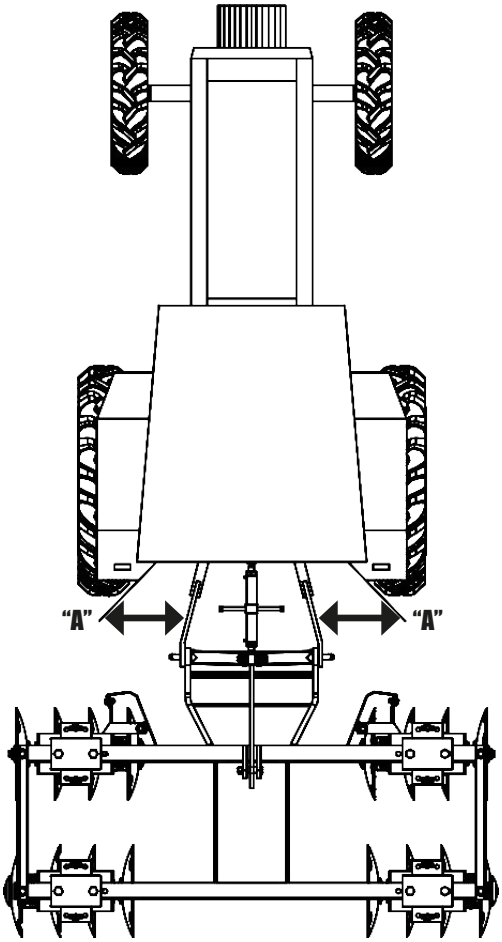
When transporting the GRH, the lower hydraulic arms must remain adjusted. Position the tractor hydraulics until the GRH is level.
Always keep the arms of the 3rd point open, locked and raised as much as possible.

▪ Hitch

• Centralization

To center the **GRH** in relation to the longitudinal axis of the tractor, proceed as follows:

01 - Align the upper hitch of the grid with the 3rd point of the tractor.
02 - Next, check that the distances **"A"** of the lower hydraulic arms are equal in relation to the tractor tires. The lower arms should be level with each other.

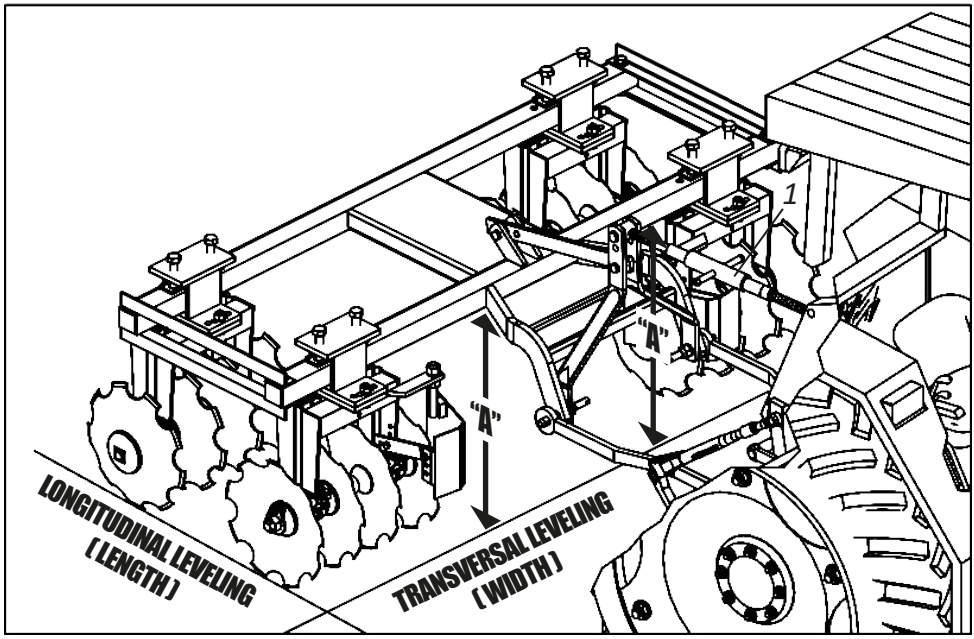


▪ Hitch

• Leveling

To level the **GRH**, proceed as follows:

01 - The tractor must be in a flat location.
02 - Then level the **GRH** transverse (width) through the crank on the lower right arm of the hydraulic hitch. Note that the **"A"** measurements must be equal.
03 - Longitudinal leveling (length) is done via the 3rd point arm (1).
04 - Note that the **GRH** discs must be parallel to the ground, i.e. they must all touch the same plane.



⚠ ATTENTION

When lifting the GRH for maneuvering, check the tractor's instruction manual to make sure the weight required does not affect the stability and drivability of the tractor and grid combination. If the weight distribution is not correct, serious accidents can occur, even causing death. Baldan is not responsible for the incorrect use of GRH.

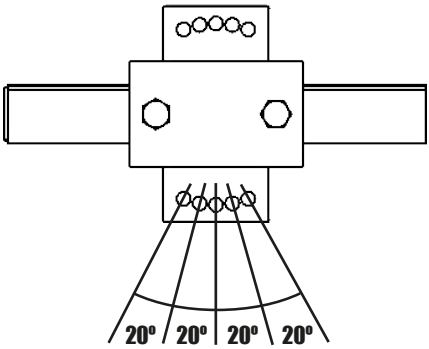
▪ Adjustment

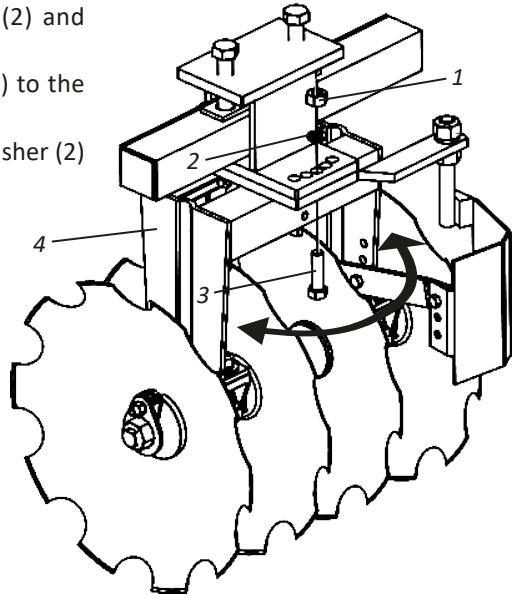
• Operating setting - Part I

HORIZONTAL ADJUSTMENT

The horizontal adjustment is made every **20 degrees**, totaling **40 degrees** on each side. To make the adjustment, proceed as follows:

01 - Loosen the nut (1), spring washer (2) and remove the screw (3).
02 - Then turn the shaft fixing bracket (4) to the desired angle.
03 - Then replace the screw (3), spring washer (2) and nut (1), locking it in place.

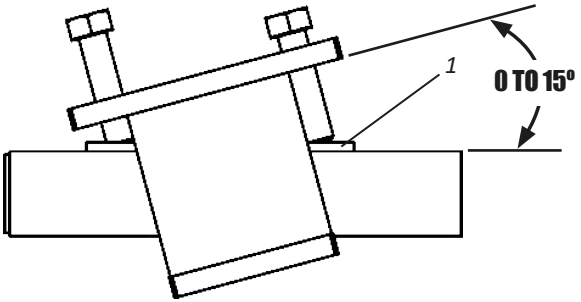




VERTICAL ADJUSTMENT

Vertical adjustment is made from **0 to 15 degrees** on each side. To make the adjustment, proceed as follows:

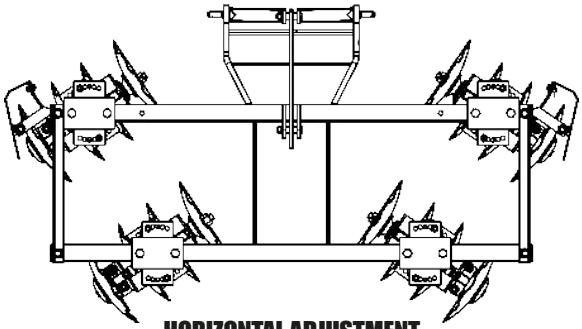
01 - Loosen the screw on one side and tighten it on the other, making sure that the scarf plate (1) doesn't come out of place, allowing the screw to catch on the frame.



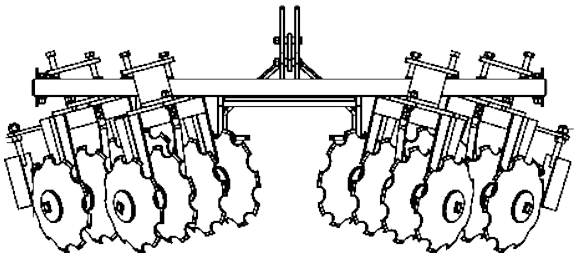
▪ Adjustment

• Operating setting - Part II

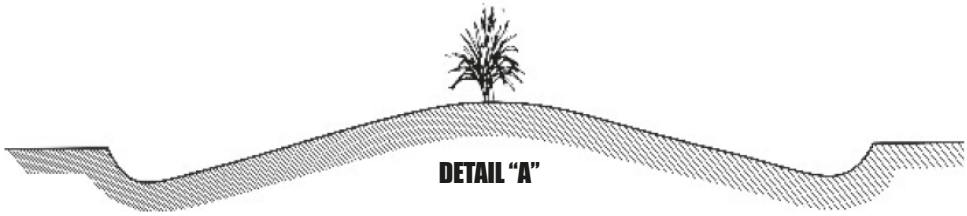
In the figures below, we can see the horizontal adjustment of the discs together with the vertical adjustment, where we can work small contour ridges, beds and even throw soil on sugar cane, corn, etc., according to the profile of the work carried out in **detail "A".**



HORIZONTAL ADJUSTMENT



VERTICAL ADJUSTMENT



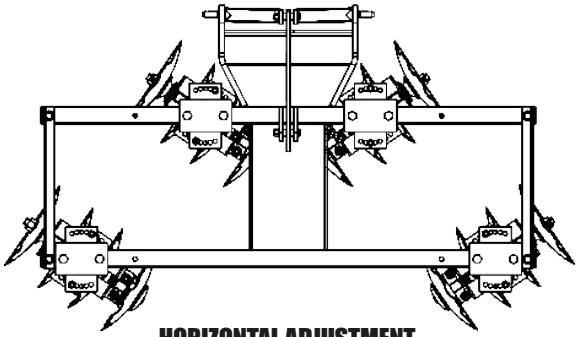
DETAIL "A"

NOTE | **In order to increase the contour bead, the GRH must be passed over the same place several times.**

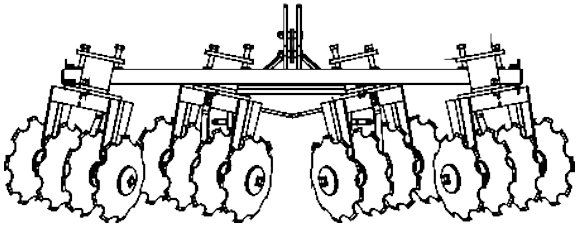
▪ Adjustment

• Operating settings - Part III

In the figures below, we can see the horizontal adjustment of the discs together with the vertical adjustment, where we can see the work of small basins for water retention in orange orchards, according to the profile of the work carried out in **detail "B".**



HORIZONTAL ADJUSTMENT



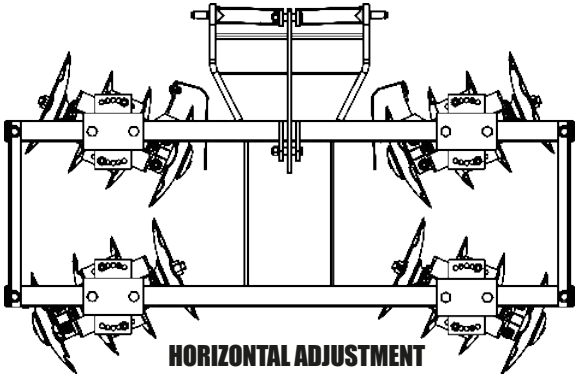
VERTICAL ADJUSTMENT

DETAIL "B"

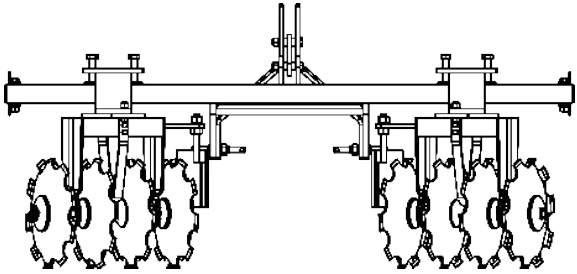
▪ Adjustment

• Operating settings - Part IV

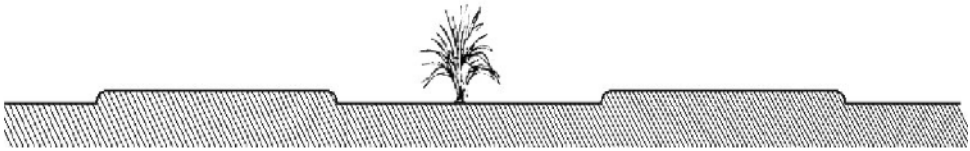
In the figures below, we can see the horizontal adjustment of the discs together with the vertical adjustment, where we can work on cereals, sugar cane, etc., both on level and sloping ground, as shown in the profile of the work carried out in **detail "C".**



HORIZONTAL ADJUSTMENT



VERTICAL ADJUSTMENT



DETAIL "C"

▪ Operations

• Recommendations for operation - Part I

Preparing the **GRH** and the tractor will save time and yield better results in the field. You may find the following suggestions useful.

HARROW STRUCTURE

After the first day working with the **GRH**, retighten all the bolts and nuts and check the condition of the pins and locks on the harrow frame. Then retighten all the bolts and nuts on the grid structure every 24 hours.

DISC SECTIONS

Special attention to the **GRH** record sections. During the first week of use, tighten all the bolts and nuts on the disc sections every day. Then retighten the screws and nuts on the disc sections periodically.

GENERAL RECOMMENDATIONS

01 - Adjust the tractor according to the contents of the instruction manual, always using the front and rear weights to stabilize the equipment.
02 - Always couple to the tractor at idle speed and with great care.
03 - When using the **GRH**, it is important to check the hitching system and transverse leveling to make sure that the discs have the same depth of penetration in the soil.
04 - After hitching and leveling, the next adjustments will be made directly in the work field, analyzing the soil in terms of its texture, humidity and the types of operations to be carried out with the **GRH**.
05 - On the tractor, choose a gear that allows you to maintain a certain reserve of power, guaranteeing yourself against unforeseen stresses.
06 - Observe the working and transport speeds specified on page 10. We advise to not exceed the speeds to maintain the efficiency of the service and avoid possible damage to **GRH**.
07 - While maneuvering in the headlands, first operate the hydraulic cylinders gradually, lifting the disc sections.
08 - Do not disconnect any hoses without first relieving the pressure in the circuit. To do this, press the control levers a few times with the engine switched off.
09 - Remove sticks or any other object that can get stuck on the discs.

▪ Operations

• Recommendations for operation - Part II

10 **-** In compacted soil where it is difficult for the discs to penetrate, the depth can be minimal, making the work unsatisfactory. In these cases, it is recommended to apply other more suitable products first.

11 **-** During work or transportation, the tractor drawbar must remain secured.

12 **-** When carrying out any maintenance on the **GRH**, lower it to the ground and switch off the engine.

13 **-** **GRH** has several settings, but only local conditions can determine the best setting.

If in doubt, never operate or handle the GRH, consult After Sales.
Phone: 0800-152577 / E-mail: posvenda@baldan.com.br

▪ Calculations

• Approximate hourly output - Part I

To calculate **GRH's** approximate hourly output, use the following formula:

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

WHERE:

A = Area to be worked
L = Grid working width (in meters)
V = Average tractor speed (in meters/hour)
F = Output factor: 0.90
X = Value of the hectare: 10,000 m²

Example: A **16-disc GRH** with the maximum working width will produce how much Ha in one hour of work at an average speed of 7 km/h.

A = ?
L = 1,40 m
V = 7.000 m/h
F = 0,90
X = 10.000 m² (Calculated in hectare)

$$A = \frac{2{,}60 \times 7.000 \times 0{,}90}{10.000} = 1{,}63 \text{ Ha/h}$$

Model	Nr of discs	Working widht (mm)		Average Speed (m/h)	Output Factor	Aproximate output in hectare in hours	
		Minimum	Maximum			Minimum	Maximum
GRH	6	1300	2300	7.000	0,90	0,81	1,44
	8	1400	2600	7.000	0,90	0,88	1,63
	12	1300	2300	7.000	0,90	0,81	1,44
	16	1400	2600	7.000	0,90	0,88	1,63
GRH	6	1300	2300	7.000	0,90	0,81	1,44
	8	1400	2600	7.000	0,90	0,88	1,63
	12	1300	2300	7.000	0,90	0,81	1,44
	16	1400	2600	7.000	0,90	0,88	1,63

The formula for calculating approximate production refers to the calculation of areas to be worked or worked by **GRH**. If you want to know the time it will take to work an area of known value, simply divide the value of this area by **GRH's** hourly output.

▪ Calculations

• Approximate hourly output - Part II

Example: What time "X" will it take for a **16-disc GRH** grid with the maximum working width to produce 35 hectares at an average speed of 7km/h?

$$X = \frac{35\ Ha}{1{,}63\ Ha/h} = 21 \text{ hours approximately to work 35 hectares}$$

ATTENTION **The GRH's hourly output can vary due to factors that alter the pace of work, such as (soil moisture and hardness, slope of the land, inadequate settings and working speed).**

▪ Maintenance

GRH has been developed to give you maximum performance in terrain conditions. Experience has shown that periodic maintenance of certain parts of the **GRH** is the best way to help you avoid problems, so we suggest checking.

• Lubrication

Lubrication is essential for good performance and greater durability of **GRH's** moving parts, helping to save on maintenance costs.

Before starting the operation, carefully lubricate all the grease fittings, always observing the lubrication guidelines on the following page. Ensure the quality of the lubricant in terms of its efficiency and purity, and avoid using products contaminated by water, dirt and other agents.

• Table of greases and equivalents

Manufacturer	Recommended types of grease
Petrobrás	Lubrax GMA-2
Atlantic	Litholine MP 2
Ipiranga	Ipiflex 2
Castrol	LM 2
Mobil	Grease MP
Texaco	Marfak 2
Shell	Alvania EP 2
Esso	Multi H
Bardahl	Maxlub APG-2EP
Valvoline	Palladium MP-2
Petronas	Tutela Jota MP 2 EP
	Tutela Alfa 2K
	Tutela KP 2K

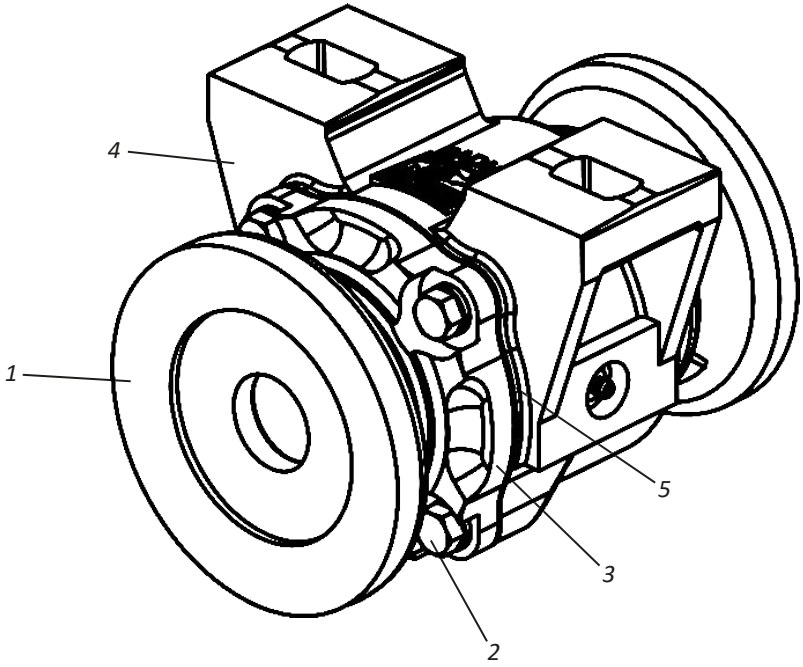
ATTENTION **For manufacturers and/or equivalent brands not listed in the table, check the manufacturer's technical manual.**

▪ Maintenance

• Disc section bearing adjustments

When the bearings in the disc sections show slack, proceed as follows to adjust them:

01 - Remove the washer (1).
02 - Then loosen the screws (2) and remove the cover (3) from the bearing (4).
03 - Then remove one or two gaskets (5) from the bearing (4) cover (3). Replace the cover (3) and retighten it.
04 - If the slack persists, you can face the cover (3) to increase the adjustment, then assembly it on the bearing with as many gaskets as necessary.
05 - The bearing must rotate freely, i.e. without slack.



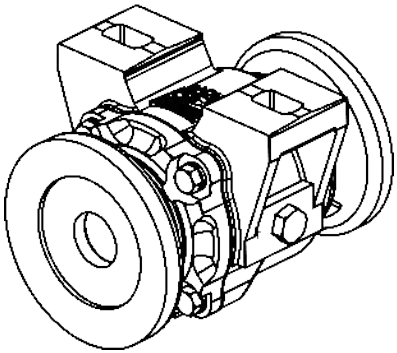
⚠ ATTENTION

Do not assemble the bearing without the gaskets (5).

▪ Maintenance

• Oil bearing

During the first few days of operation of the **GRH**, check the oil level in the bearings daily, then every 120 hours.



NOTE

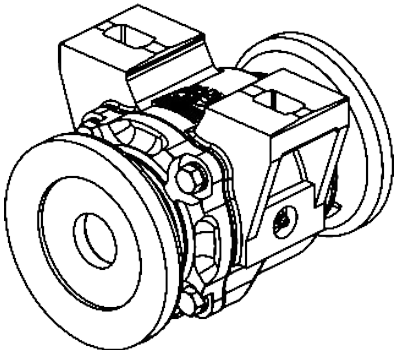
The ideal oil level is when it reaches the hole in the plug.
To check the bearing oil level, look for a flat place.

ATTENTION

Change the oil every 1200 working hours using 0.090 liters.
Use transmission oil: 90 API GL4, MIL-L-2105; SAEJ306, May/81: SAE 80W, 90 and 140.

• Grease bearing

Grease bearings should be lubricated every 12 hours using the grease specified below.



NOTE

Before lubricating the bearing, clean the grease fitting with a clean, lint-free cloth. Replace any damaged grease fittings.

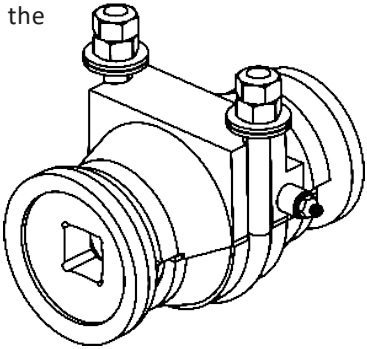
ATTENTION

The amount of grease in each bearing is 120 grams.
Only use grease: EP (Specification DIN51825 KP00K Consistency NLGI 2/3).

▪ Maintenance

• Friction bearing

Friction bearings should be lubricated daily using the grease specified below.



NOTE

Before lubricating the bearing, clean the grease fitting with a clean, lint-free cloth. Replace any damaged grease fittings.

ATTENTION

The amount of grease in each bearing is 80 grams.
Only use grease: EP (Specification DIN51825 KP00K Consistency NLGI 2/3).

▪ Maintenance

• Periodic Maintenance

Parts description	Number of grease fittings				Oil change	Lubricate with grease	Retighten	Replace	Check	Maintenance interval
	GRH 6	GRH 8	GRH 12	GRH 16						
Friction bearings	4	4	8	8		X				Daily
Grease bearings	4	4	8	8		X				12 hours
Axle bolts and nuts	-	-	-	-			X			50 hours
Bolts and nuts	-	-	-	-			X			100 hours
Oil bearing	4	4	8	8					X	120 hours
Oil bearing	4	4	8	8	X					1200 hours
Retainers/Bearings	-	-	-	-				X		1500 hours
Discs	-	-	-	-				X		When necessary

▪ Maintenance

• Care

01 - Before each job, check the condition of all pins, bolts, bearings, discs and sections. When necessary, retighten them.
02 - Travel speed must be carefully controlled according to the terrain conditions.
03 - **GRH** is used in several applications, requiring knowledge and attention during handling.
04 - Only local conditions can determine the best way to operate the **GRH**.
05 - When assembling or disassembling any part of the **GRH**, use appropriate methods and tools.
06 - Carefully observe the lubrication intervals at the various lubrication points on the **GRH**. Respect the lubrication intervals.
07 - Always check parts for wear. If a replacement is needed, always demand original Baldan parts.
08 - Always keep the **GRH** discs sharp.

IMPORTANT | **Proper and regular maintenance is necessary to mensure the long life of the GRH.**

• General cleaning - Part I

01 - When storing the **GRH**, clean it thoroughly and rinse it only with water. Check that the paint hasn't worn off, if it has, give it a general coat, apply the protective oil and lubricate the **GRH** thoroughly. Do not use burnt oil or any other type of abrasive.
02 - Fully lubricate the **GRH**. Check all the moving parts of the **GRH**, and if they show any,wear or slack, make the necessary adjustments or replace the parts, leaving the grid ready for the next job.
03 - After all maintenance work, store the grid in a covered, dry place, properly, supported.

Avoid: - Discs coming into direct contact with the ground.

04 - When connecting or disconnecting hydraulic hoses, do not let the ends touch the soil. Before connecting the hydraulic hoses, clean the connections with a clean, lint-free cloth. **Do not use oakum!**

▪ Maintenance

• General cleaning - Part II

05 - Replace all stickers, especially warning stickers that are damaged or missing. Make everyone aware of their importance and about the risks of accidents when instructions are not followed.
06 - After all maintenance work, store your **GRH** on a flat surface, covered and dry, away from animals and children.
07 - We recommend rinsing the **GRH** only with water when starting work.

⚠ ATTENTION | **Do not use chemicals or abrasives to wash the GRH, as this could damage its paintwork and adhesives.**

• Harrow conservation - Part I

To prolong the life and appearance of **GRH** for longer, follow the instructions below:

01 - Wash and clean all the grid components during and at the end of the working season.
02 - Use neutral products to clean the grid, following the safety and handling guidelines provided by the manufacturer.
03 - Always carry out maintenance at the times indicated in this manual.

• Harrow conservation - Part II

The following practices and precautions, if adopted by the owner or operator, make a difference to the conservation of **GRH.**

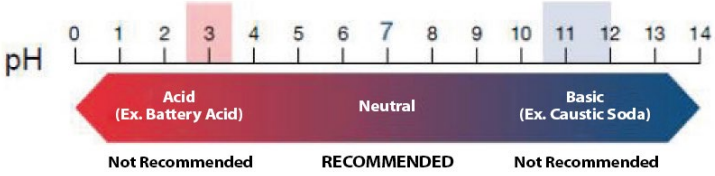
01 - Take care when pressure washing; do not direct the water jet directly at connectors and electrical components. Isolate all electrical components;
02 - Use only NEUTRAL water and detergent (pH equal to 7);
03 - Apply the product, strictly following the manufacturer's instructions, on the wet surface and in the correct sequence, respecting the time of application and washing;
04 - Stains and dirt that cannot be removed with the products should be removed with a sponge.
05 - Rinse the machine with clean water to remove all chemical residues.

▪ Maintenance

• Grid conservation - Part III

06 - Do not use: - Detergents with a basic active ingredient (pH greater than 7), may damage/stain the grid paintwork.

- Detergents with an acidic active ingredient (pH lesser than 7) act as a paint stripper (the protection of parts against oxidation).



07 - Let the machine dry in the shade, so that no water accumulates on its components. Drying too quickly can cause stains on your paintwork.

08 - After drying, lubricate all chains and grease fittings according to the recommendations in the operator's manual.

09 - Spray the entire machine, especially galvanized parts, with protective oil, following the manufacturer's application guidelines. The protectant also prevents dirt from sticking to the machine, making it easier to wash later.

10 - Observe the curing time (absorption) and application intervals as recommended by the manufacturer.

ATTENTION | **Do not use any other type of oil to protect the grid (used hydraulic oil, "burnt" oil, diesel oil, castor oil, kerosene, etc).**

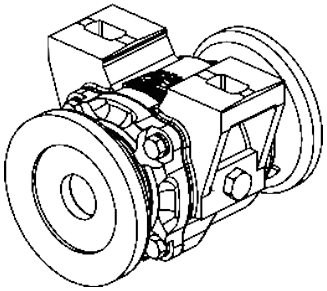
IMPORTANT | **We recommend the following protective oils:**
- Bardahl: Agro-protective 200 or 300
- ITWChemical: Zoxol DW - Series 4000

NOTE | **Failure to comply with the above maintenance measures may result in the loss of warranty on painted or galvanized components that may show oxidation (rust).**

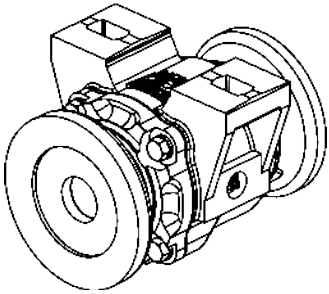
▪ Optional

• Optional accessories

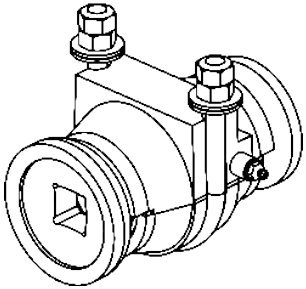
GRH has options that can be purchased according to your work requirements.



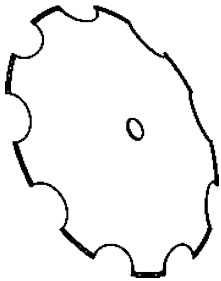
OIL BEARING WITHOUT GUARD



GREASE BEARING WITHOUT GUARD



FRICTION BEARING



CUT DISC 18", 20" Y 22"

▪ Identification

• Identification plate

To consult the parts catalog or request technical assistance from Baldan, always indicate the model (1), serial number (2) and date of manufacture (3) found on the nameplate of your **GRH**.

⚠ ATTENTION

The drawings contained in this instruction manual are for illustrative purposes only.

CONTACT

If in doubt, never operate or handle your equipment without consulting After Sales.
Phone: 0800-152577
e-mail: posvenda@baldan.com.br

PUBLICATIONS

Code: 60550201359 | CPT: GRH07817

PEÇAS ORIGINAIS BALDAN
ORIGINAL PARTS • PIEZAS ORIGINALES

▪ Identification

• Product identification

Identify the data below correctly so that you always have information about the life of your equipment.

Owner: _____

Resale: _____

Farm: _____

City: _____

State: _____

Warranty certificate No: _____

Implement: _____

Serial No: _____

Date of purchase: _____

Invoice: _____

▪ Notes

Warranty Certificate

BALDAN IMPLEMENTOS AGRÍCOLAS S/A, guarantees the normal operation of the implement to the reseller for a period of six (6) months from the date of delivery on the resale invoice to the first end consumer. During this period, **BALDAN** undertakes to repair material and/or manufacturing defects for which it is responsible, with labor, freight and other expenses being the responsibility of the dealer.

During the warranty period, any defective parts must be requested and replaced by the local dealer, who will send the defective part to **BALDAN** for analysis.

When such procedure is not possible and the dealer's ability to resolve the issue has been exhausted, the dealer will request support from **BALDAN Technical Assistance**, using the specific form distributed to dealers. After **BALDAN's** Technical Assistance has analyzed the replaced items and concluded that, they are not under warranty, then the reseller will be responsible for the costs related to the replacement; as well as the costs of material, travel including accommodation and meals, accessories, lubricants used, and other expenses arising from the call to Technical Assistance, and **BALDAN** is authorized to make the respective billing on behalf of the resale. Any repairs made to the product that is within the warranty deadline by the reseller will only be authorized by **BALDAN** upon prior presentation of a budget describing the parts and labor to be executed.

This term does not apply to products that have been repaired or modified by officials who do not belong to the **BALDAN** dealer network, or to the application of non-genuine parts or components to the user's product. This warranty shall become null and void when it is established that the defect or damage is the result of improper use of the product, failure to follow the instructions or the inexperience of the operator.

It is agreed that this warranty does not cover tires, polyethylene tanks, cardans, hydraulic components etc., which are equipment guaranteed by their manufacturers. Manufacturing and/or material defects, the subject of this warranty term, will not, under any circumstances, constitute a reason for termination of the purchase and sale contract, or for compensation of any nature.

BALDAN reserves the right to amend and/or improve the technical characteristics of its products, without prior notice, and without obligation to do so with previously manufactured products.

▪ Inspection and delivery certificate

SERVICE BEFORE DELIVERY: This implement has been carefully prepared by the sales organization, inspected in all its parts according to the manufacturer's instructions.

DELIVERY SERVICE: The user has been informed of the warranty terms in force and has been instructed in the use and maintenance of the product.

I confirm that I have been informed of the warranty terms in force and instructed on the correct use and maintenance of the implement.

Implement: _____ Serial No.: _____

Date: _____ Tax No.: _____

Resale: _____

Phone: _____ Zip Code: _____

City: _____ State: _____

Proprietário: _____

Phone: _____

Adress: _____ Number: _____

City: _____ State: _____

E-mail: _____

Date of sale: _____

Signature / Stamp of Resale _____

1st copy - Owner

▪ Inspection and delivery certificate

SERVICE BEFORE DELIVERY: This implement has been carefully prepared by the sales organization, inspected in all its parts according to the manufacturer's instructions.

DELIVERY SERVICE: The user has been informed of the warranty terms in force and has been instructed in the use and maintenance of the product.

I confirm that I have been informed of the warranty terms in force and instructed on the correct use and maintenance of the implement.

Implement: _____ Serial No.: _____

Date: _____ Tax No.: _____

Resale: _____

Phone: _____ Zip Code: _____

City: _____ State: _____

Proprietário: _____

Phone: _____

Adress: _____ Number: _____

City: _____ State: _____

E-mail: _____

Date of sale: _____

Signature / Stamp of Resale _____

2nd copy - Resale

▪ Inspection and delivery certificate

SERVICE BEFORE DELIVERY: This implement has been carefully prepared by the sales organization, inspected in all its parts according to the manufacturer's instructions.

DELIVERY SERVICE: The user has been informed of the warranty terms in force and has been instructed in the use and maintenance of the product.

I confirm that I have been informed of the warranty terms in force and instructed on the correct use and maintenance of the implement.

Implement: _____ Serial No.: _____

Date: _____ Tax No.: _____

Resale: _____

Phone: _____ Zip Code: _____

City: _____ State: _____

Proprietário: _____

Phone: _____

Adress: _____ Number: _____

City: _____ State: _____

E-mail: _____

Date of sale: _____

Signature / Stamp of Resale _____

3rd copy - Manufacturer (Please send completed form within 15 days)

1.74.05.0059-5

AC MATÃO
ECT/DR/SP

REPLY CARD

NO NEED TO SEAL

THE STAMP WILL BE PAID BY:

BALDAN IMPLEMENTOS AGRÍCOLAS S/A.

Av. Baldan, 1500 | Nova Matão | CEP: 15993-900 | Matão-SP. | Brazil
Phone: (16) 3221-6500 | Fax: (16) 3382-6500
www.baldan.com.br | email: sac@baldan.com.br
Export: Phone: +55 (16) 3221-6500 | Fax: +55 (16) 3382-4212 | 3382-2480
email: export@baldan.com.br

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