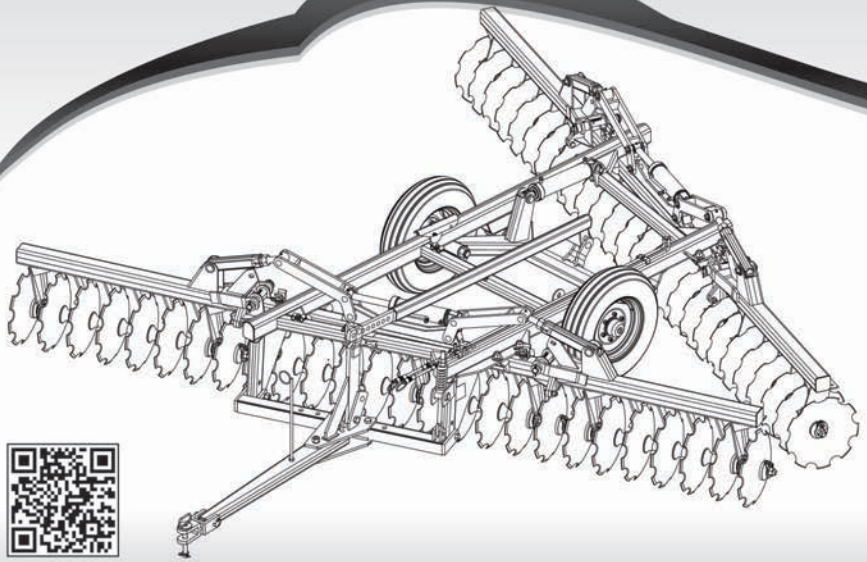
NVAM / NVAP

•Leveling Disc Harrow Remote Control



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www.baldan.com.br

Instructions Manual

INTRODUCTION

Thank you for your preference and congratulations on the excellent choice you have just made because you have purchased a product manufactured with the ***BALDAN IMPLEMENTOS AGRÍCOLAS S/A*** technology.

This manual will guide you in the necessary procedures from the time of purchase to the operating utilization, safety and maintenance procedures.

BALDAN guarantees the delivery of this equipment to the dealer, complete and in perfect conditions.

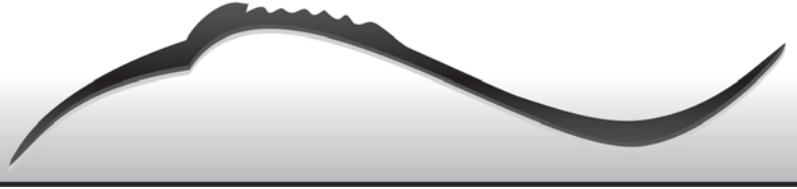
The dealer is responsible for the safekeeping and conservation during the period it remains in its possession, and also for mounting, retightening, lubrication and general revision.

During technical delivery, the dealer should instruct the customer user on maintenance, safety, obligations in eventual technical assistance, strict observation of the warranty deed and reading of the Instructions manual.

Any request for technical assistance in warranty must be made to the dealer from whom it was purchased.

We emphasize once more the need to carefully read the certificate of warranty and observe all the items of this manual because by doing so you will be increasing the service life of the equipment.

Instruction Manual



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WARRANTY

PRODUCT WARRANTY

BALDAN IMPLEMENTOS AGRÍCOLAS S/A guarantees the dealer the normal functioning of the equipment for a period of six (6) months as from the date of delivery on the sales invoice to the first final consumer.
During this period **BALDAN** is committed to repairing material and/or manufacturing defects under its responsibility, which includes manual labor, freights and other expenses under the responsibility of the dealer.
During the warranty period, the request and replacement of eventual defective parts should be executed by the regional dealer, who will send the defective part to **BALDAN** for analysis.
When this procedure is not possible and the problem solving capacity of the dealer is exhausted, the dealer must request the support from **BALDAN** Technical Assistance through the specific form distributed to dealers.
After **BALDAN** Technical Assistance analyzes the replaced items and concludes that it is not a warranty issue, the dealer becomes responsible for the costs related to the replacement as well as the expenses with material, trip including accommodation and meals, accessories, lubricant used and other expenses resulting from calling Technical Assistance, and **BALDAN** is authorized to make the respective billing in the name of the dealer.
Any repair made by the dealer on the product during the warranty period will only be authorized by **BALDAN** through prior presentation of the budget describing the parts and manual labor to the executed.

The product subjected to repairs or modifications at official dealers not belonging to the network of **BALDAN** dealers as well as the application of non genuine parts or components to the user product are not included in this deed.
The present warranty becomes void when it is confirmed that the defect or damage is the result of undue use of the product, non-observation of the instructions or the inexperience of the operator.
It is agreed that the present warranty does not cover tires, polyethylene hoppers, cardans, hydraulic components, etc, which are equipments under warranty by their manufacturers.
The manufacturing and/or material defects subject to this warranty deed will not include, under any circumstance, reason for termination of purchase and sales contract or for indemnification of any kind.
BALDAN reserves the right to change and/or improve the technical characteristics of its products without prior warning and without obligation of doing so with the previously manufactured products.

GENERAL INFORMATION

OWNER

BALDAN IMPLEMENTOS AGRÍCOLAS S/A is not responsible for any accidental damage caused by the undue use, transport or storage of your equipment, be it due to the negligence and/or inexperience of any person.
Only persons with the full knowledge of the tractor and the equipment should execute the transport and operation.
BALDAN is not responsible for any damage caused in unforeseeable or abnormal situations during the normal use of the equipment.

Incorrect use of this equipment may result in serious or fatal accidents. Before placing the equipment into operation, carefully read the manual's instructions. Ensure that the person responsible for the operation is instructed on the correct and safe handling. Also ensure that the operator read and understood the product instruction manual.

NR-31 – OCCUPATIONAL SAFETY AND HEALTH IN AGRICULTURE, LIVESTOCK, FORESTRY, FOREST EXPLORATION AND AQUACULTURE.

The objective of this Regulatory Standard is to establish the precepts to be observed in the organization and in the work environment, compatible with planning and development of the agricultural, livestock, forestry, forest exploration and aquaculture activities with occupational safety, health and environment.

THE OWNER OR OPERATOR OF THE EQUIPMENT.
Carefully read and observe the provision in NR-31.

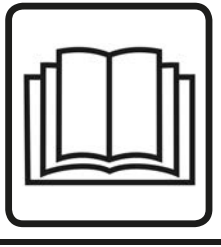
For more information, consult the site and read the full NR-31.
http://portal.mte.gov.br/legislacao/normas-regulamentadoras-1.htm

SAFETY RULES

THIS SYMBOL INDICATES IMPORTANT SAFETY WARNING. EVERY TIME YOU SEE THIS IN THIS MANUAL, CAREFULLY READ THE MESSAGE THAT FOLLOWS AND PAY ATTENTION TO THE POSSIBILITY OF PERSONAL ACCIDENTS.

WARNING

• Carefully read the instructions manual to know the recommended safety practices.



WARNING

• Only start operating the tractor when you are duly accommodated and with the safety belt attached.

WARNING

• Do not transport people on the tractor and neither inside nor over the equipment.

WARNING

• There are risks of severe injuries due to falling when working on sloped lands.
• Do not over speed.

SAFETY RULES

⚠ WARNING

• Do not work with the tractor if the front is not heavy enough for the back equipment. Add weights to the front or front wheels in case it may be raised.

⚠ WARNING

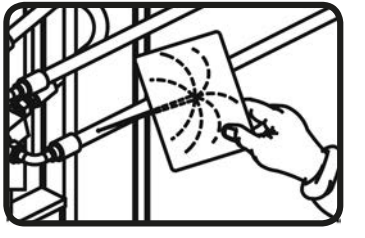
• Before executing any maintenance on your equipment, check if it is at a standstill.
• Avoid being hit.

⚠ WARNING

• Always stay away from active elements of the equipment (Discs) as they are sharp and can cause accidents.
• Use safety gloves on your hands when performing services on the discs.

⚠ WARNING

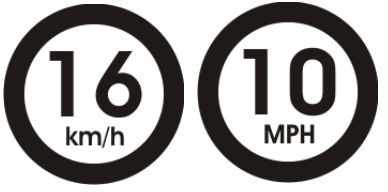
• When searching for a possible leak on the hoses, use a piece of cardboard or wood and never use your hands.
• Avoid the incision of fluid on the skin.



SAFETY RULES

WARNING

• Do not exceed the speed of 16 km/h or 10 MPH when transporting this equipment in order to avoid the risk of damages and accidents.



WARNING

• The hydraulic oil works under pressure and can cause serious injuries in the case of leaks. Periodically check the state of conservation of the hoses. Immediately replace in the case of leaks.

• Before connecting or disconnecting the hydraulic hoses, release the pressure of the system, activating the control with the tractor switched off.

NR-31 – OCCUPATIONAL SAFETY AND HEALTH IN AGRICULTURE, LIVESTOCK, FORESTRY, FOREST EXPLORATION AND AQUACULTURE.

The objective of this Regulatory Standard is to establish the precepts to be observed in the organization and in the work environment, compatible with planning and development of the agricultural, livestock, forestry, forest exploration and aquaculture activities with occupational safety, health and environment.

THE OWNER OR OPERATOR OF THE EQUIPMENT.

Carefully read and observe the provision in NR-31.

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

WARNINGS

01- ⚠ When operating with the equipment, prevent people from staying too close to or over the implement.

02- ⚠ Use gloves during the mounting or dismounting in the disc sections.

03- ⚠ Relieve the pressure of the circuit when switching the hydraulic hoses on or off.

04- ⚠ Periodically check the state of conservation of the hoses. Immediately replace it in the case of leaks because the oil operates at high pressure and can cause serious injuries.

05- ⚠ Do not use loose clothing as it can get caught on the equipment.

06- ⚠ When activating the tractor engine, be properly seated on the operator seat and have complete knowledge of the correct and safe handling of the tractor as well as the equipment. Always keep the gear stick in the neutral position, switch off the power take-off control gearing and place the hydraulic controls in the neutral position.

07- ⚠ Do not start the tractor engine in a closed setting without suitable ventilation because the exhaust gases are dangerous to health.

08- ⚠ When maneuvering the tractor to the coupler of the equipment, make sure there is enough space and no one too close to it, always maneuver at reduced speed and be prepared to brake in an emergency.

09- ⚠ Do not make adjustments with the equipment in operation.

WARNINGS

10- ⚠ When working on sloped lands, proceed carefully, always maintaining the necessary stability. In the case of misbalance, reduce the speed, turn the wheels towards the slope side of the land and never raise the equipment.

11- ⚠ Always drive the tractor at speeds compatible with safety, especially in works on uneven lands or slopes, always keep the tractor coupled.

12- ⚠ When driving the tractors on streets, keep the brake pedals interconnected.

13- ⚠ Do not work with the tractor if the front is light. Add weights to the front or front wheels in case it may be raised.

14- ⚠ When leaving the tractor, put the brake handle in the neutral position and use the parking brake. Do not leave the equipments coupled to the tractor with the hydraulic system in the raised position.

15- ⚠ Alcoholic drinks or some drugs may cause loss of reflexes and change the physical conditions of the operator. Therefore, never operate this equipment when under the influence of these substances.

16- ⚠ Read or explain all the procedure above to the user that cannot read.

In case of doubts consult the After Sales.
Phone Number: 08000-152577 / E-mail: posvenda@baldan.com.br

SPRING-ARTICULATED REMOTE CONTROL LEVELING HARROW NVAM

01- Stiffener
02- Center front frame
03- Right side front frame
04- Left side front frame
05- Center rear frame
06- Right side rear frame
07- Left side rear frame
08- Shackle
09- Coupling header
10- Stabilizer bar support
11- Stabilizer rod
12- Spring tie rod
13- Discs
14- Wheel articulation shaft
15- Lifter stabilizer bar
16- Tires
17- Wheel articulation piston
18- Cleaners
19- Spring

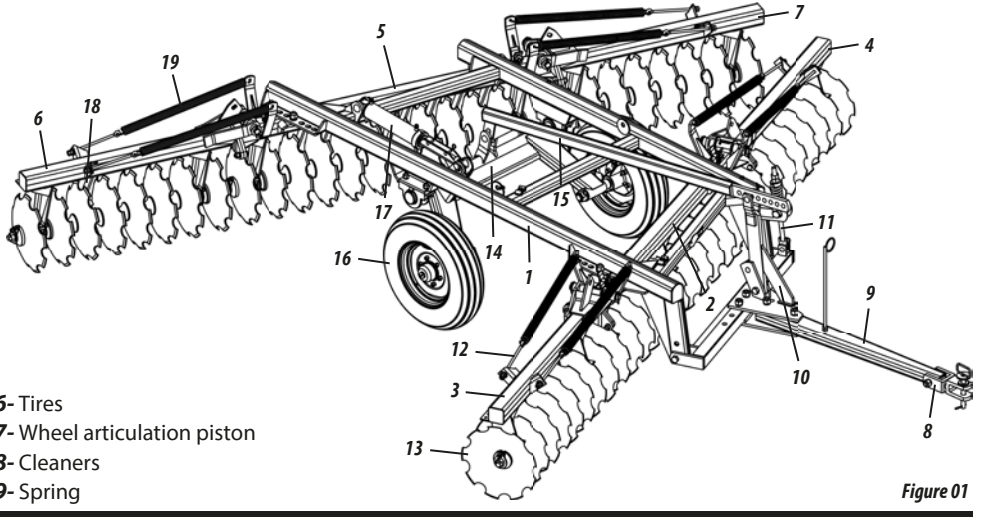


Figure 01

SPRING-ARTICULATED REMOTE CONTROL LEVELING HARROW NVAP

01- Stiffener
02- Center front frame
03- Right side front frame
04- Left side front frame
05- Center rear frame
06- Right side rear frame
07- Left side rear frame
08- Shackle
09- Coupling header
10- Stabilizer bar support
11- Stabilizer rod
12- Hydraulic hoses
13- Discs
14- Wheel articulation shaft
15- Lifter stabilizer bar
16- Tires
17- Wheel articulation piston
18- Cleaners
19- Articulation bar
20- Articulation piston
21- Articulation lever bar

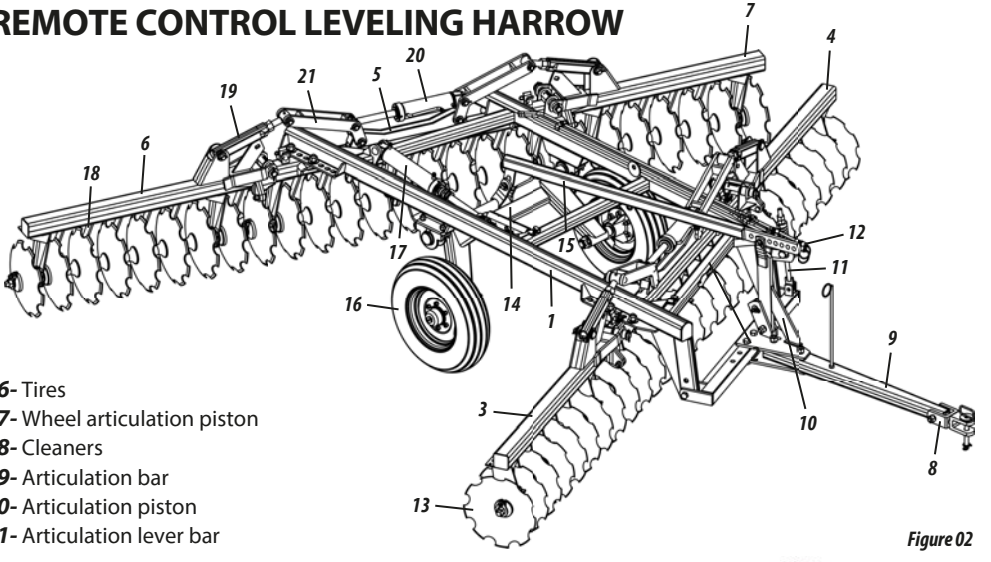


Figure 02

NVAM

Table 1

Model	Number of Discs	Disc Diameter	Spacing between Discs (mm)	Shaft Diameter	Working Width (mm)	Working Depth (mm)	Approximate Weight (kg)		Tractor Power (Cv)	Wheel set
							Disc 20"	Disc 22"		
NVAM	36	20" ou 22"	175	1.1/4"	3000	50 - 150	1557	1688	90 - 95	Single
NVAM	40	20" ou 22"	175	1.1/4"	3425	50 - 150	1600	1741	95 - 110	Single
NVAM	42	20" ou 22"	175	1.1/4"	3600	50 - 150	1687	1828	110 - 118	Single
NVAM	44	20" ou 22"	175	1.1/4"	3760	50 - 150	1714	1859	115 - 123	Single
NVAM	48	20" ou 22"	175	1.1/4"	4100	50 - 150	1885	2047	125 - 135	Single
NVAM	52	20" ou 22"	175	1.1/4"	4450	50 - 150	1953	2124	135 - 145	Single
NVAM	56	20" ou 22"	175	1.1/4"	4810	50 - 150	1951	2136	145 - 150	Single
NVAM	42	20" ou 22"	200	1.1/4"	4100	50 - 150	1820	1988	118 - 126	Single
NVAM	44	20" ou 22"	200	1.1/4"	4300	50 - 150	1809	1947	123 - 132	Single
NVAM	48	20" ou 22"	200	1.1/4"	4700	50 - 150	1919	2081	135 - 145	Single
NVAM	52	20" ou 22"	200	1.1/4"	5100	50 - 150	1958	2129	145 - 156	Single

Baldan reserves the right to change and/or improve the technical characteristics of its products without prior warning and without obligation of doing so with the previously manufactured products. The technical specifications are approximate and informed in the normal working conditions.

NVAP

Table 2

Model	Number of Discs	Disc Diameter	Spacing between Discs (mm)	Shaft Diameter	Working Width (mm)	Working Depth (mm)	Approximate Weight (kg)		Tractor Power (Cv)	Wheel set
							Disc 20″	Disc 22″		
NVAP	44	20″ ou 22″	175	1.1/4″	3760	50 - 150	2006	2082	115 - 123	Single
NVAP	48	20″ ou 22″	175	1.1/4″	4100	50 - 150	2018	2180	125 - 135	Single
NVAP	52	20″ ou 22″	175	1.1/4″	4450	50 - 150	2096	2267	135 - 145	Single
NVAP	56	20″ ou 22″	175	1.1/4″	4810	50 - 150	2200	2386	145 - 150	Single
NVAP	42	20″ ou 22″	200	1.1/4″	4100	50 - 150	1956	2097	118 - 126	Single
NVAP	44	20″ ou 22″	200	1.1/4″	4300	50 - 150	1991	2136	123 - 132	Single
NVAP	48	20″ ou 22″	200	1.1/4″	4700	50 - 150	2070	2232	135 - 145	Single
NVAP	52	20″ ou 22″	200	1.1/4″	5100	50 - 150	2183	2354	145 - 156	Single

Baldan reserves the right to change and/or improve the technical characteristics of its products without prior warning and without obligation of doing so with the previously manufactured products. The technical specifications are approximate and informed in the normal working conditions.

MOUNTING

The NVAM / NVAP harrows leave the factory dismounted. To mount them, follow the instructions below:

1 - ***Before mounting the NVAM / NVAP, seek an ideal location where mounting is facilitated.***
2 - ***Use gloves on your hands when performing mounting and dismounting services on the discs.***
3 - ***Do not use loose clothing because it can get caught on the equipment.***

MOUNTING OF DISC SECTION (FIGURE 3)

The NVAM / NVAP can be purchased with mixed discs, only with smooth or cutout discs.
When mounting the NVAM / NVAP, always start with the set of discs and proceed according to the instructions in the next page:

MOUNTING

01 - Place the concave thrust washer (2) on the shaft (1), followed by the washer (3), nut (4) and lock (5), securing it with the pressure washer (6) and bolt (7).

02 - Then put the disc (7), bearing (8), another disc (7), separator spool (9) on the shaft (1) and so on successively, **as shown in figure 3.**

03 - When the set is complete with all the discs, bearings, separator spools, put the convex thrust washer (10), the other washer (3) and nut (4), tightening with the key until the entire set is firmly secured.

04 - Then wedge the set of discs and tighten the nut (4) through impacts. When maximum tightness is almost obtained, adjust the lock (5) with the convex washer (10), always tightening the nut until it coincides with the hole, fixing it with the pressure washer (6) and bolt (7).

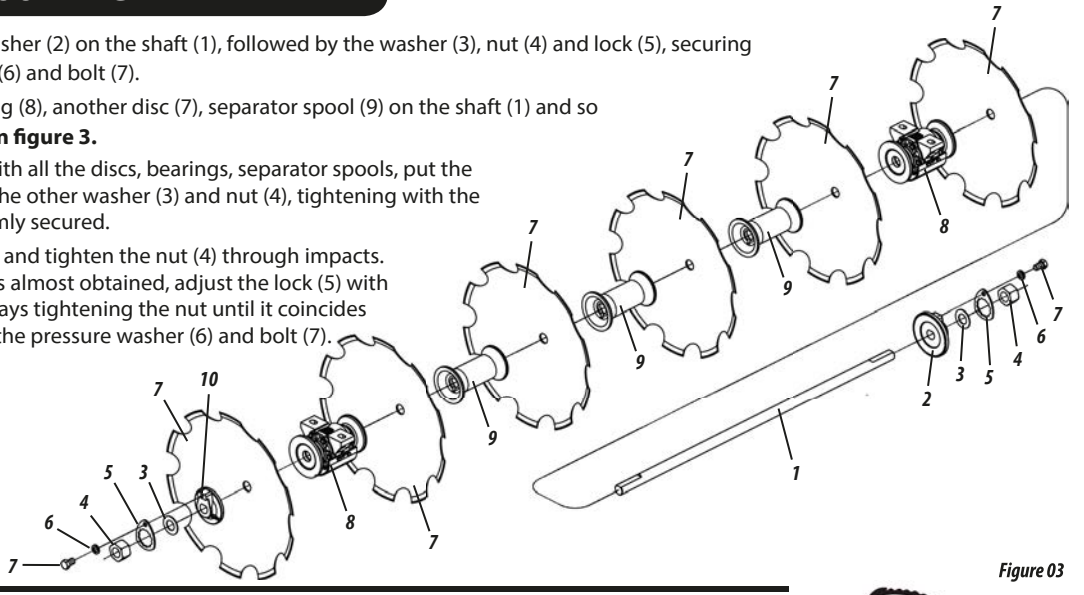
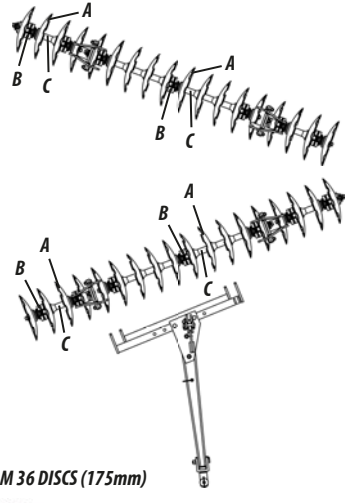


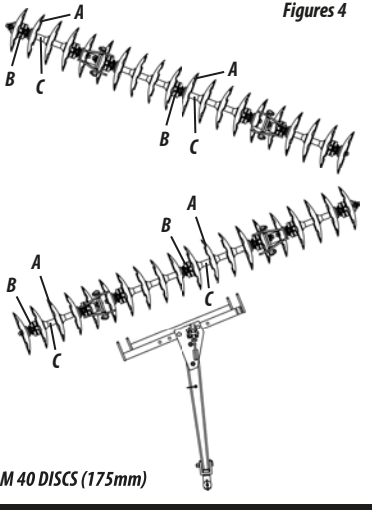
Figure 03

MOUNTING OF DISC SECTIONS (FIGURE 4)



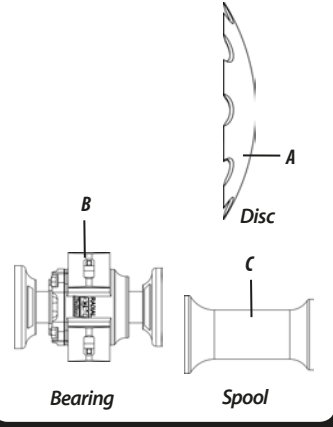
NVAM 36 DISCS (175mm)

Figures 4

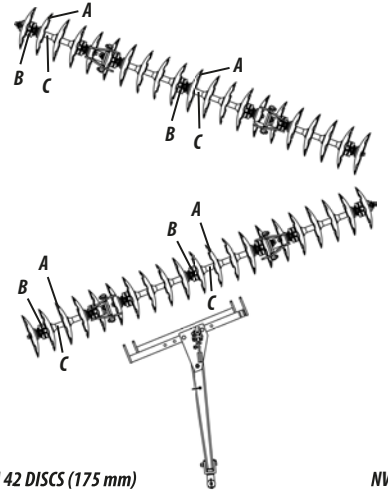


NVAM 40 DISCS (175mm)

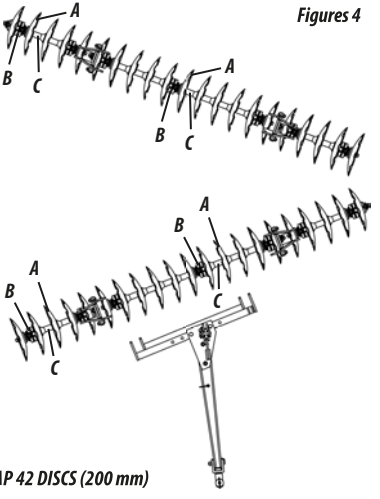
LEGEND:



MOUNTING OF DISC SECTIONS CONTINUATION (FIGURE 4)



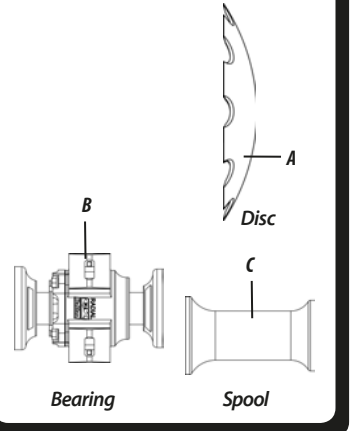
NVAM 42 DISCS (175 mm)



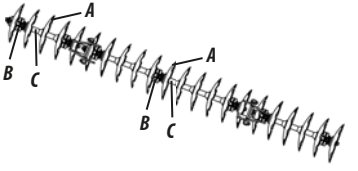
NVAM / NVAP 42 DISCS (200 mm)

Figures 4

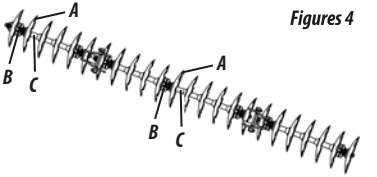
LEGEND:



MOUNTING OF DISC SECTIONS CONTINUATION (FIGURE 4)



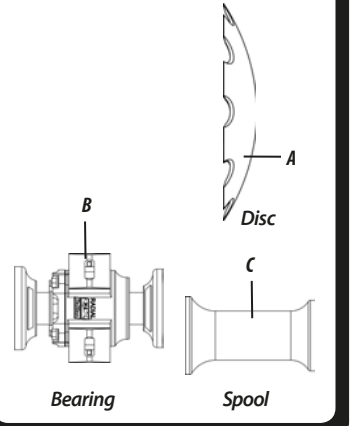
NVAM / NVAP 44 DISCS



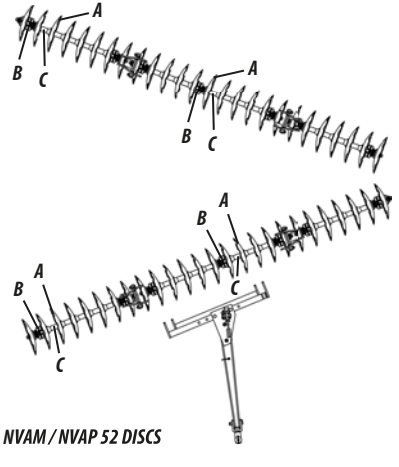
NVAM / NVAP 48 DISCS

Figures 4

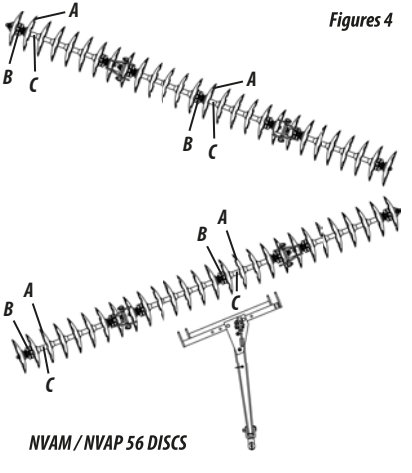
LEGEND:



MOUNTING OF DISC SECTIONS CONTINUATION (FIGURE 4)

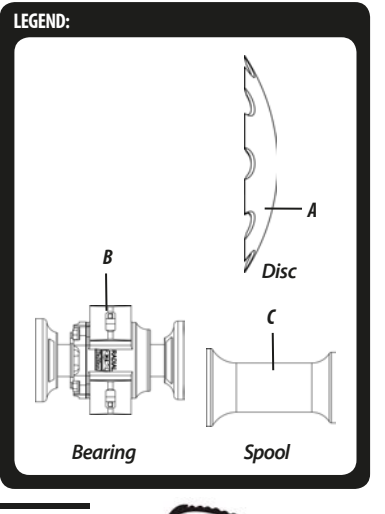


NVAM / NVAP 52 DISCS



NVAM / NVAP 56 DISCS

Figures 4



MOUNTING

MOUNTING OF CENTER FRAMES ON THE STIFFENER (FIGURE 5)

Start mounting the NVAM / NVAP with the center frames, proceeding as follows:

01 - Put the front center frame (1) and rear center frame (2) on a flat and clean place.

02 - Then put the stiffener (3) on the front (1) and rear center frames (2), securing them with the bolt (4), lock (5), flat washer (6), pressure washer (7) and nut (8).

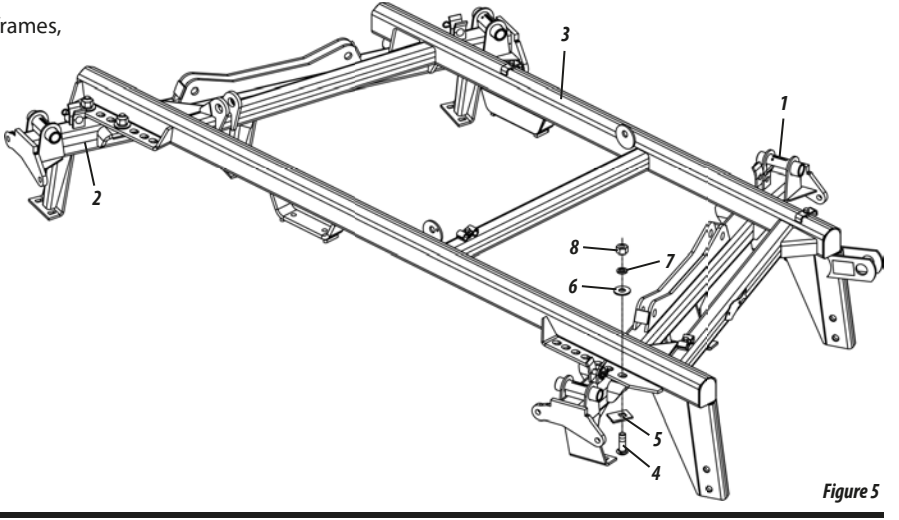


Figure 5

MOUNTING OF DISC SECTIONS ON CENTER FRAMES (FIGURE 6)

After fixing the center frames (1) on the stiffener (2), attach the disc sections (3), proceeding as follows:

01 - Raise the front or rear part of the harrow and place the disc section (3) in row and coincide the holes of the wedges (4) with the bearings, then secure using the bolts (5), flat washer (6), pressure washer (7) and nut (8).

02 - Then raise the other part of the harrow and repeat the operation, checking the concavity of the discs of one section to the other, which must be otherwise.

03 - After mounting, check to see if the wedges (4) are facing the concavity of the discs.

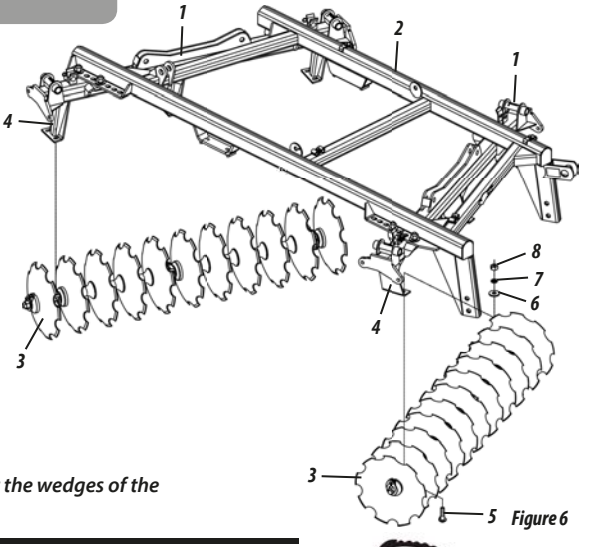


Figure 6

WARNING ***When mounting the disc sections on the frames, ensure that the wedges of the frames face the concavity of the discs.***

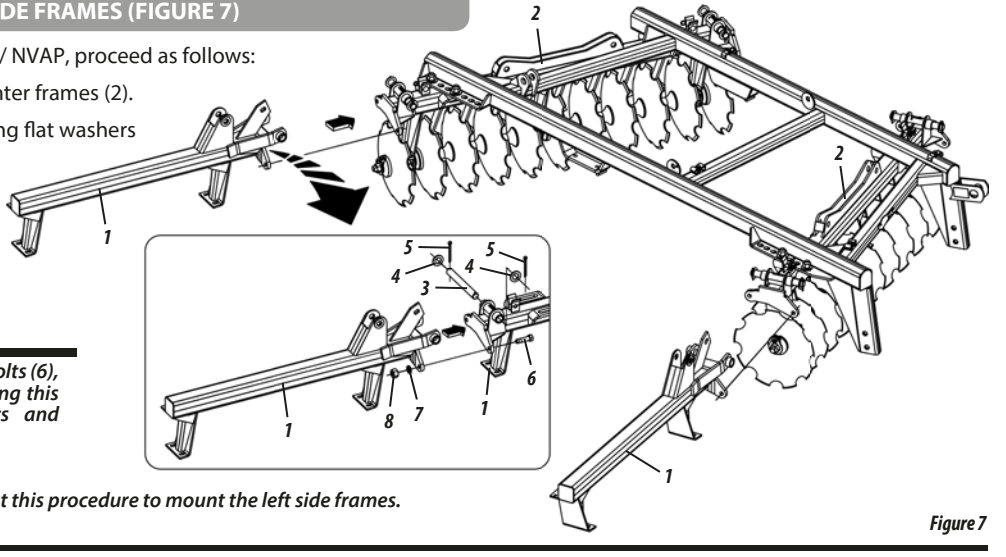
MOUNTING OF SIDE FRAMES (FIGURE 7)

To mount the side frames of the NVAM / NVAP, proceed as follows:

01 - Couple the side frames (1) to the center frames (2).

02 - Then place the pins (3), securing using flat washers (4) and retaining pin (5).

03 - After, lock the frames with the bolts (6), pressure washers (7) and nuts (8).



WARNING

For the NVAP harrow, do not attach the bolts (6), pressure washers (7) and nuts (8). Ignoring this warning may cause serious accidents and damages to the harrow.

IMPORTANT ***Repeat this procedure to mount the left side frames.***

Figure 7

MOUNTING OF DISC SECTIONS ON SIDE FRAMES (FIGURE 8)

After fixing the side frames (1) on the center frames (2), attach the disc sections (3), proceeding as follows:

01 - Raise the front or rear part of the harrow and place the disc section (3) in row and coincide the holes of the wedges (4) with the bearings, then secure using the bolts (5), flat washer (6), pressure washer (7) and nut (8).

02 - Then raise the other part of the harrow and repeat the operation, checking the concavity of the discs of one section to the other, which must be otherwise.

03 - After mounting, check to see if the wedges (4) are facing the concavity of the discs.

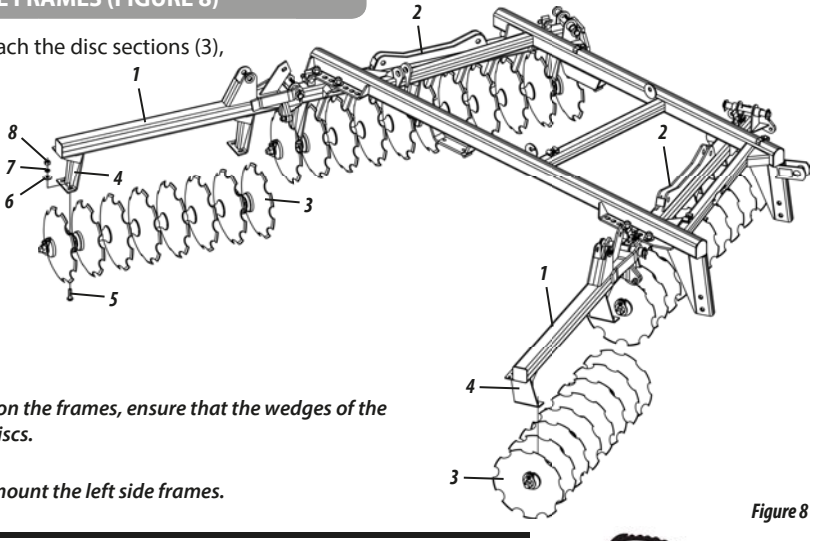


Figure 8

WARNING | ***When mounting the disc sections on the frames, ensure that the wedges of the frames face the concavity of the discs.***

IMPORTANT | ***Repeat this procedure to mount the left side frames.***

MOUNTING OF CLEANERS (FIGURE 9)

After mounting the disc sections on the frames, attach the cleaners (1), proceeding as follows:

01 - Put the cleaners (1) on the frames (2), securing them with bolts (3), pressure washers (4) and nuts (5).

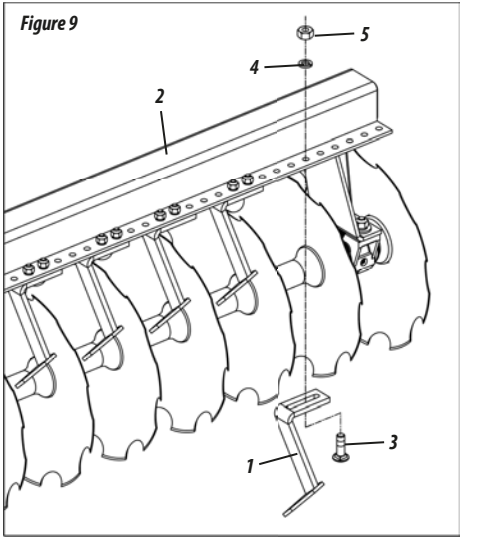


Figure 9

WARNING ***When mounting the cleaners, these should be 0.5 to 1.0 cm away from the discs.***

MOUNTING OF STIFFENER WHEEL SUPPORT (FIGURE 10)

To mount the wheel support (1) of the center stiffener (2), proceed as follows:

01 - Couple the hub (3) to the wheel support (1) and secure the hub (3) to the stiffener (2) through bolts (4), pressure washers (5) and nuts (6).

02 - Then couple the rear part of the hydraulic cylinder (7) to the stiffener (2), securing with the pin (8), flat washer (9) and retaining pin (10).

03 - Then couple the front part of the hydraulic cylinder (7) to wheel support (1), securing with the pin (11), flat washer (12) and retaining pin (13).

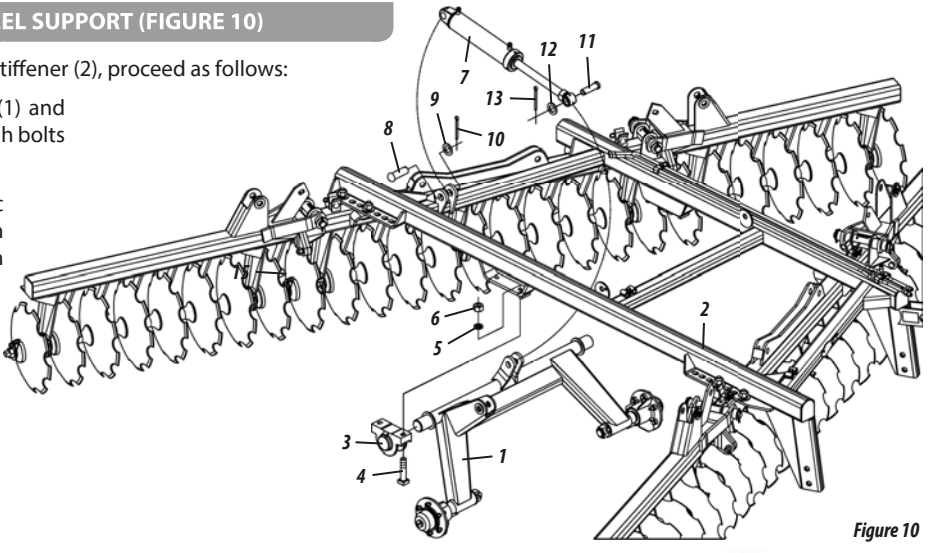


Figure 10

MOUNTING OF TIRES (FIGURE 11)

After mounting the wheel support on the stiffeners, attach the tires (1), proceeding as follows:

01 - Couple the tires (1) to the wheel support (2) using the bolts (3) and nuts (4).

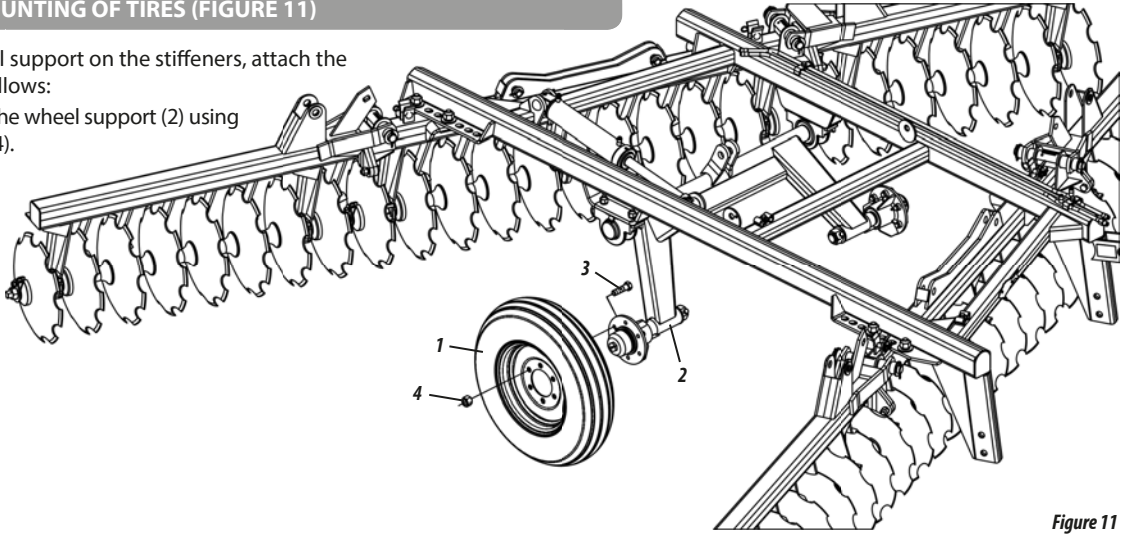


Figure 11

MOUNTING OF COUPLING HEADER (FIGURE 12)

To mount the coupling header, proceed as follows:

01 - Attach the coupling header (1) to the stiffener (2) using the bolts (3), pressure washers (4) and nuts (5).

02 - Then couple the stabilizer bar support (6) to the header (1) using the bolt (7), pressure washer (8) and nut (9).

03 - After, insert the pin (10) in the header (1), locking the stabilizer bar support (12) with the flat washer (11) and lock (12).

04 - Lastly, attach the spring rod (13) to the header (1) and stiffener (2) using the pin (14), flat washer (15) and retaining pin (16).

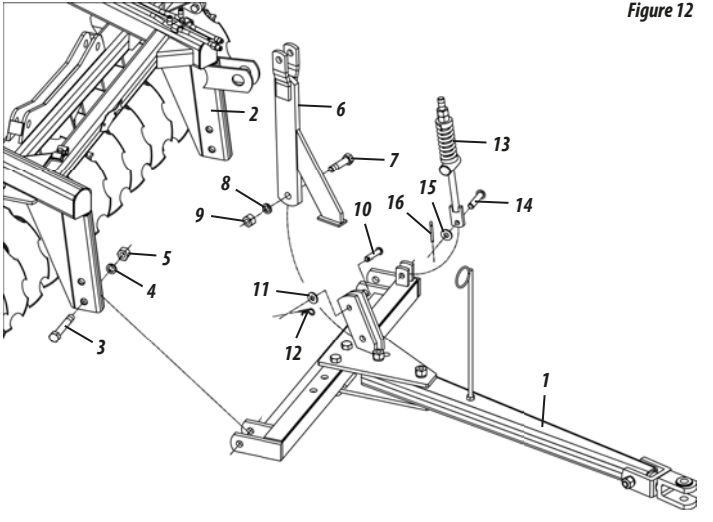


Figure 12

MOUNTING OF ARTICULATION SYSTEM (FIGURE 13)

After mounting the coupling header, mount the articulation system of the NVAP harrow proceeding as follows:

01 - Attach the articulation bars (1) to the stiffener (2) with the pins (3), flat washers (4) and retaining pins (5).

02 - Then couple the adjusters (6) to the side frames (7) using the pins (8), flat washers (9) and retaining pins (10).

03 - After, couple the adjusters (6) to the articulation bars (1) using the pins (11), flat washers (12) and retaining pins (13).

04 - Lastly, couple the hydraulic cylinders (14) to the articulation bars (1) using the pins (15), flat washers (16) and retaining pins (17).

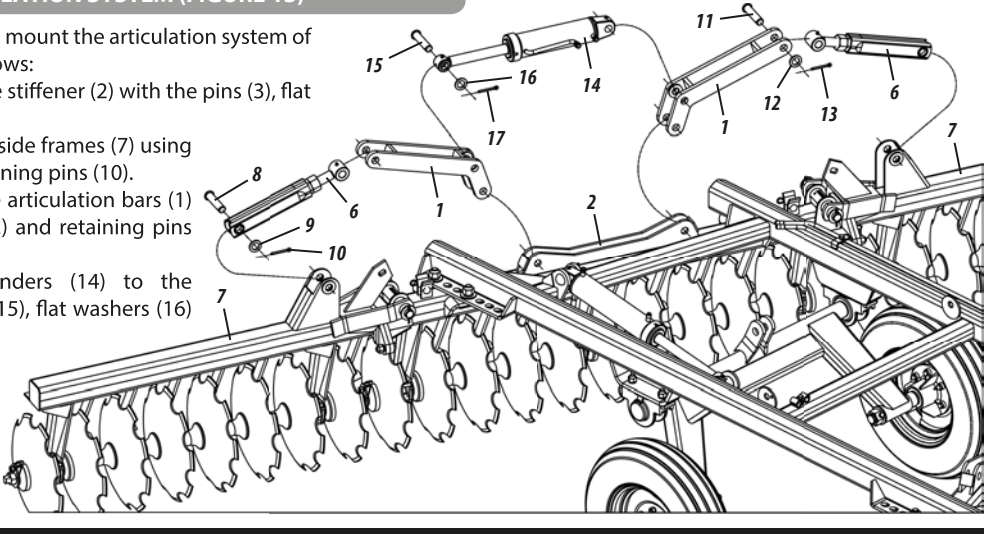


Figure 13

MOUNTING OF SPRING SYSTEM (FIGURE 14)

After mounting the coupling header, mount the spring system of the NVAM harrow proceeding as follows:

01 - Attach the springs (1) to the supports (2) of the center frame (3).

02 - After, attach the springs (1) to the tie rods (4).

03 - Lastly, attach the tie rods (4) to the side frames (5) using the flat washers (6), nut and locknut (7).

WARNING ***To adjust the pressure of the springs (1), articulate the harrow and tighten the nut and locknut (7) of the tie rod (4) until the springs (1) are firmly secured.***

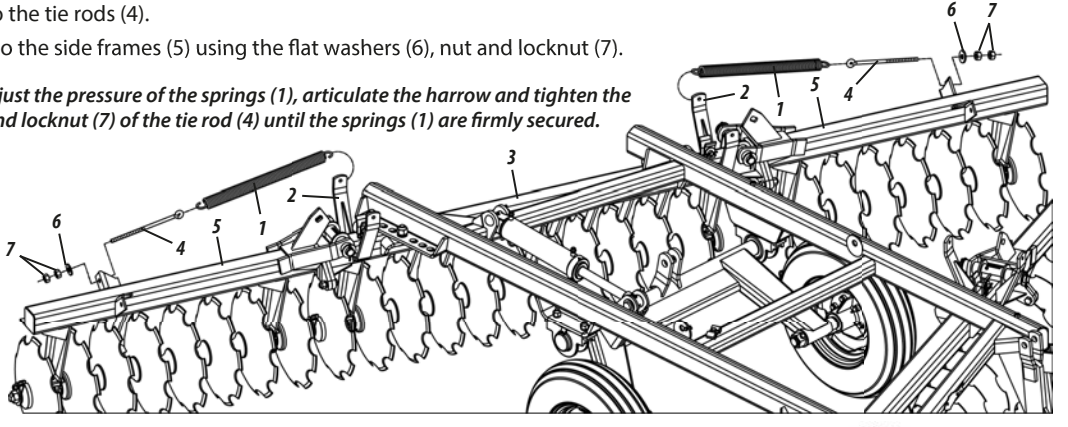


Figure 14

MOUNTING OF STABILIZER BAR (FIGURE 15)

To remove the stabilizer bar (1), proceed as follows:

01 - Attach the rear part of the stabilizer bar (1) to the wheel support (2) using the pin (3), flat washer (4) and retaining pin (5).

02 - Then, attach the front part of the stabilizer bar (1) to the support (6) using the pin (7), flat washer (8) and lock (9).

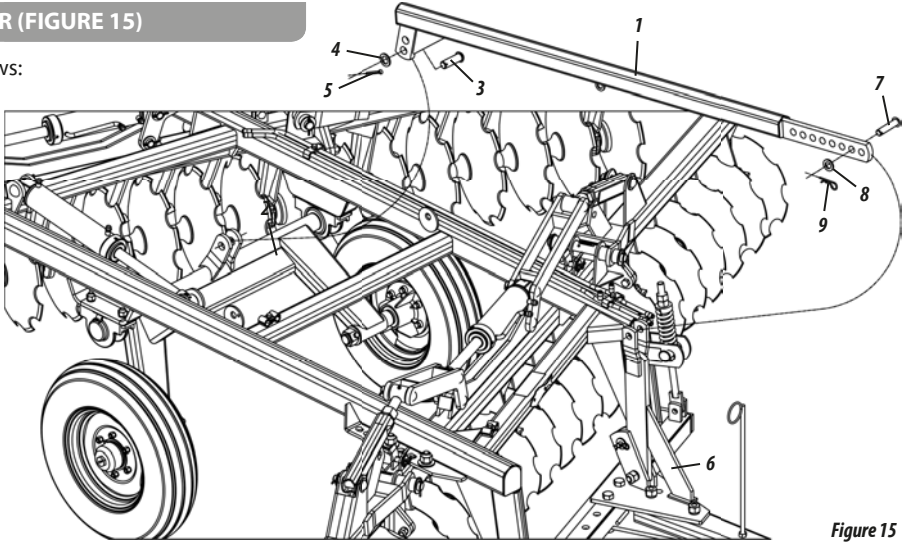


Figure 15

COUPLING

COUPLING THE HARROW TO DRAW BAR OF THE TRACTOR (FIGURE 16)

To couple the NVAM / NVAP to the draw bar of the tractor, follow the instructions below:

01 - Before coupling the NVAM / NVAP, look for a safe place of easy access.
02 - Always use reduced gear with low acceleration.
03 - Before connecting or disconnecting the hydraulic hoses, stop the engine and release the pressure of the circuit by fully activating the control handles.
04 - Make sure no one gets injured by the equipment movement when releasing the pressure of the system.

- Observe the instructions below and proceed as follows:

01 - Level the coupling header (1) of the NVAM / NVAP in relation to the coupling of the tractor. Then slowly bring the tractor close to the harrow on reverse, paying attention to the application of the brakes.
02 - Proceed with coupling the NVAM / NVAP to the tractor by attaching it with the coupling pin (2), flat washer (3) and lock (4).
03 - Finish coupling the hoses (5) to the quick coupling system of the tractor.

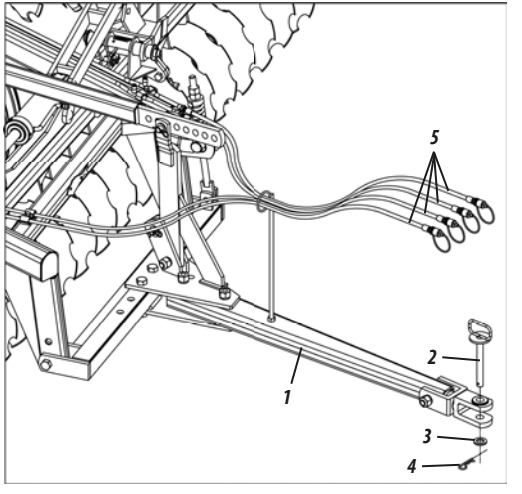


Figure 16

TRANSPORTATION (FIGURES 17)

Before transporting the NVAM / NVAP, observe the instructions below:

NVAM

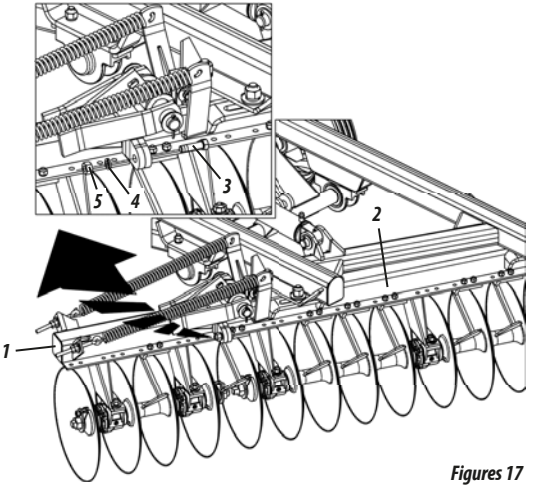
01 - NVAM leaves the factory with its side frames (1) locked to the center frames (2). Before articulating the NVAM, remove the bolts (3), pressure washers (4) and nuts (5).

NVAP

02 - For logistic purposes, the NVAP also leaves the factory with its side frames 91) locked to the center frames (2) but the bolts (3), pressure washers (4) and nuts (5) should not be used under any circumstance for this harrow model, therefore, remove them from the harrow leaving the frames unlocked both during transportation and during work.

WARNING

Do not articulate the NVAM / NVAP harrow before removing the bolts (1), pressure washers (2) and nuts (3). Ignoring this warning may cause damages to the harrow or even serious accidents.



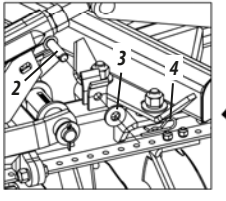
Figures 17

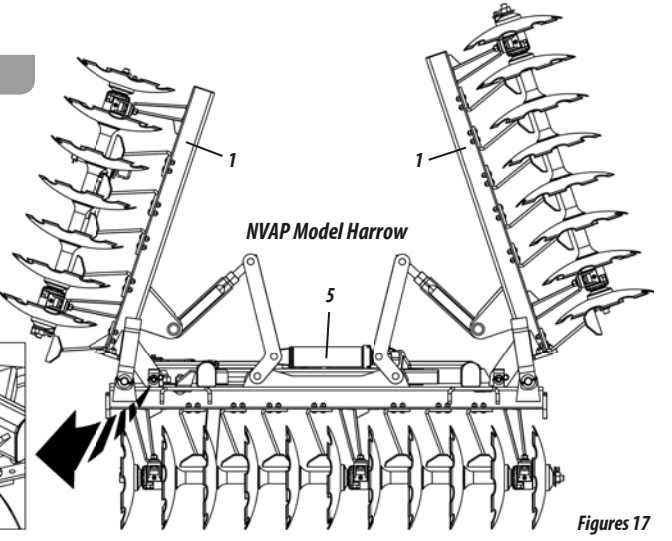
TRANSPORTATION (FIGURES 17)

Having observed the previous instructions, articulate the NVAM / NVAP according to the instructions below.

NVAM 03 - Execute articulation of the side frames (1), locking them with the use of bolts (2), flat washer (3) and lock (4).

NVAP 04 - Execute articulation of the side frames (1), by activating the hydraulic cylinders (5), locking them with the use of bolts (2), flat washer (3) and lock (4).





Figures 17

NOTE

Do not transport the NVAM / NVAP without first locking the side arms.

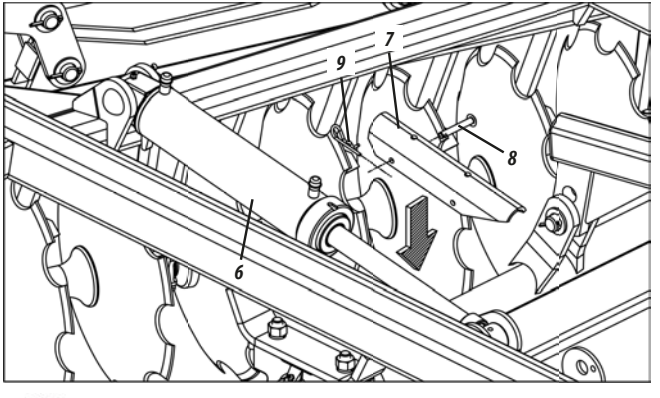
IMPORTANT ***When articulating the NVAM / NVAP, avoid having people close to it because of the risk of accidents caused by possible mechanical or hydraulic failures, causing the frame to lower rapidly.***

TRANSPORTATION CONTINUATION (FIGURES 17)

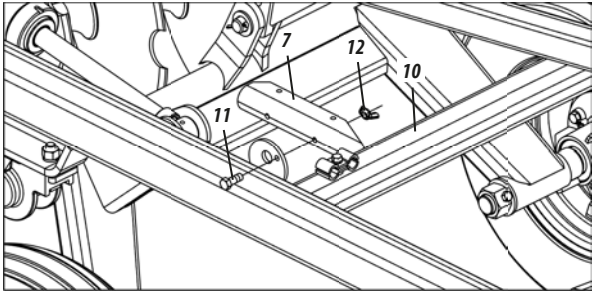
05 - After articulating the NVAM / NVAP, activate the rod of the hydraulic cylinder (6) up to the necessary measurement.

06 - After, put the lock (7) on the rod of the hydraulic cylinders (6) until it fills the entire space between the coupling of the rods and the plunger of the hydraulic cylinders (6) and attach it using the pin (8) and lock (9).

07 - After transporting the NVAM / NVAP, remove the lock (7) from the hydraulic cylinder and attach it to the stiffener (10) with the bolt (11) and wing nut (12).



Figures 17



WARNING ***Do not transport the NVAM / NVAP without placing the lock (5) on the hydraulic cylinder (4).***

WORK (FIGURES 18)

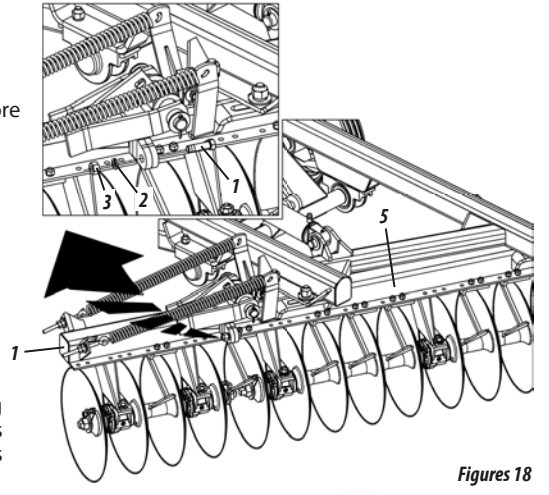
Before transporting the NVAM / NVAP, observe the instructions below:

NVAM

01 - NVAM leaves the factory with its side frames (1) locked to the center frames (2). Before articulating the NVAM, remove the bolts (3), pressure washers (4) and nuts (5).

NVAP

02 - For logistic purposes, the NVAP also leaves the factory with its side frames 91) locked to the center frames (2) but the bolts (3), pressure washers (4) and nuts (5) should not be used under any circumstance for this harrow model, therefore, remove them from the harrow leaving the frames unlocked both during transportation and during work.



Figures 18

⚠ WARNING Do not articulate the NVAM / NVAP harrow before removing the bolts (1), pressure washers (2) and nuts (3). Ignoring this warning may cause damages to the harrow or even serious accidents.

WORK CONTINUATION (FIGURES 18)

Having observed the previous instructions, disarticulate the NVAM / NVAP according to the instructions below.

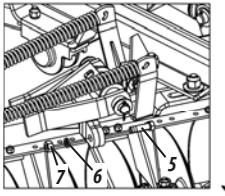
NVAM

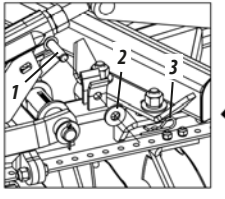
03 - Remove the bolts (1), flat washers (2) and locks (3) and disarticulate the side frames (4).

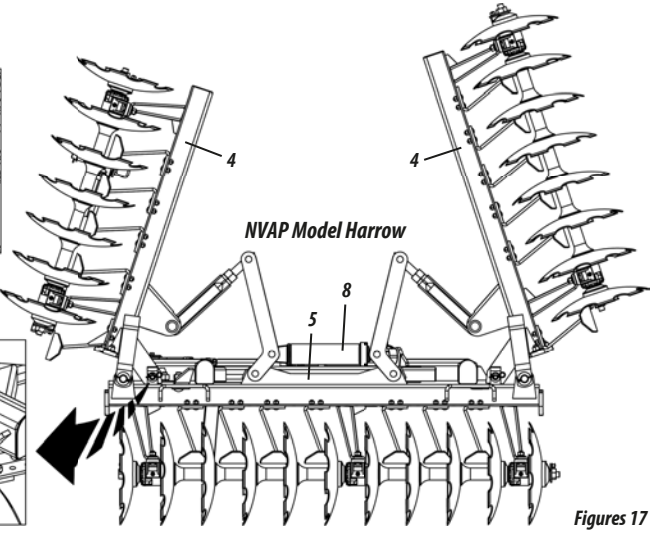
04 - After, place the bolts (5), pressure washers (6) and nuts (7), locking the side frames (4) on the center frames (5).

NVAP

05 - Remove the bolts (1), flat washers (2) and locks (3) and disarticulate the side frames (4) by activating the hydraulic cylinders (8).







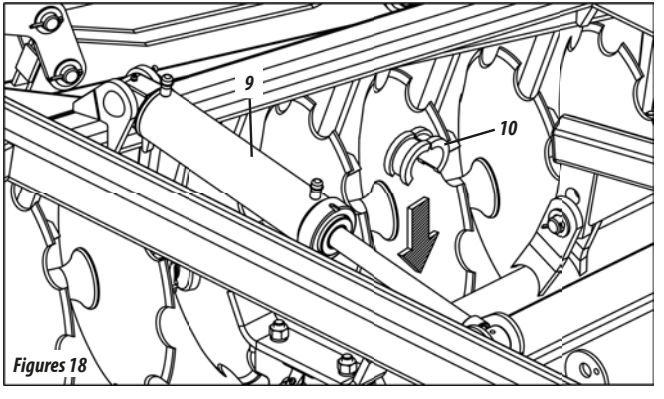
Figures 17

IMPORTANT ***When disarticulating the NVAM / NVAP, avoid having people close to it because of the risk of accidents caused by possible mechanical or hydraulic failures, causing the frame to lower rapidly.***

WORK CONTINUATION (FIGURES 18)

06 - After disarticulating the NVAM / NVAP, operate the rods of the hydraulic cylinders (9) up to the necessary measurement in order to limit the depth of the harrow.

07 - Then put the limiting rings (10) on the rods of the hydraulic cylinders (8) until they fill up the entire space between the coupling of the rods and the plungers of the hydraulic cylinders (8).



Figures 18

08 - After working with the NVAM / NVAP, remove the limiting rings (10) from the hydraulic cylinders.

⚠ WARNING

After adjustment, the NVAM / NVAP will always operate at the same depth both on hard and soft land because the limiting rings (10) will be limiting the stroke of the hydraulic cylinders (8), which means, it will prevent the oscillation of the wheels.

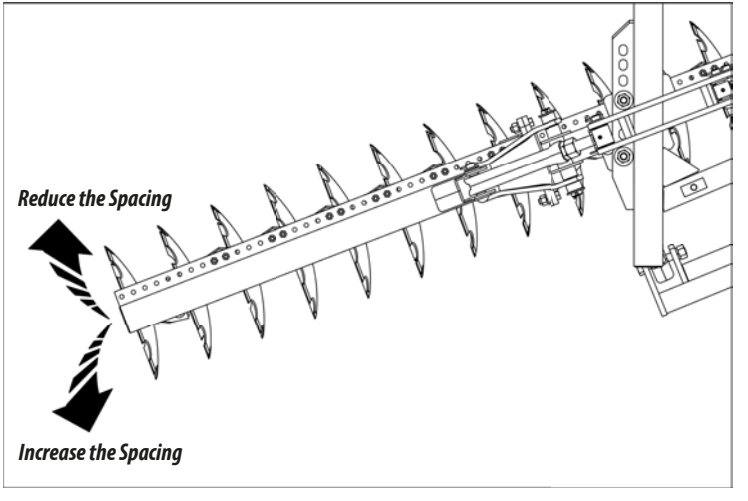
HARROW SPACING ADJUSTMENTS (FIGURES 19)

To obtain the ideal penetration of the discs in the soil, the harrow spacing should be adjusted and this varies with the type of soil:

01 - On lands of greater penetration difficulty, increase the harrow spacing.

02 - On light and loose lands, reduce the harrow spacing.

To open and close the NVAM / NVAP, proceed according to the instructions on the next page:



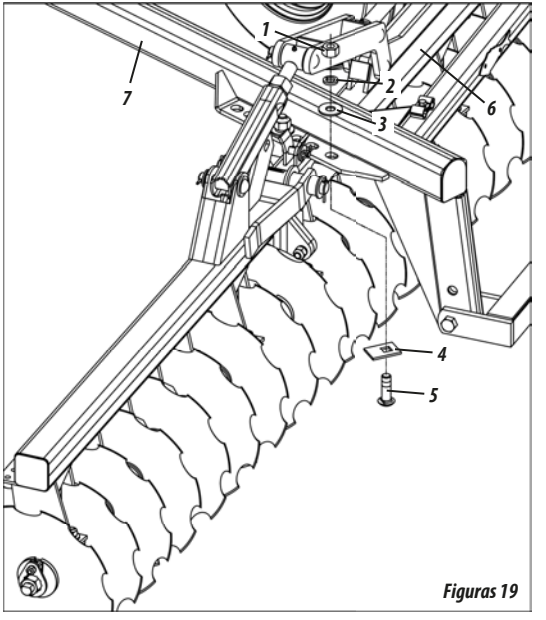
Figures 19

HARROW SPACING ADJUSTMENTS CONTINUATION (FIGURES 19)

01 - First, loosen the nuts (1), pressure washers (2) and flat washers (3), and remove the locks (4) and bolts (5).

02 - Then adjust the frames (6), reducing or increasing the opening.

03 - After, attach it back to the stiffener (7).



Figuras 19

WARNING | ***The wheels also aid in controlling the depth of the discs.***

ARTICULATION BAR ADJUSTMENT (FIGURE 20)

To level the side frames (1) of the NVAP, proceed as follows:

01 - Loosen the nut (2), adjusting the articulation bar (3) until the side frame (1) is leveled.

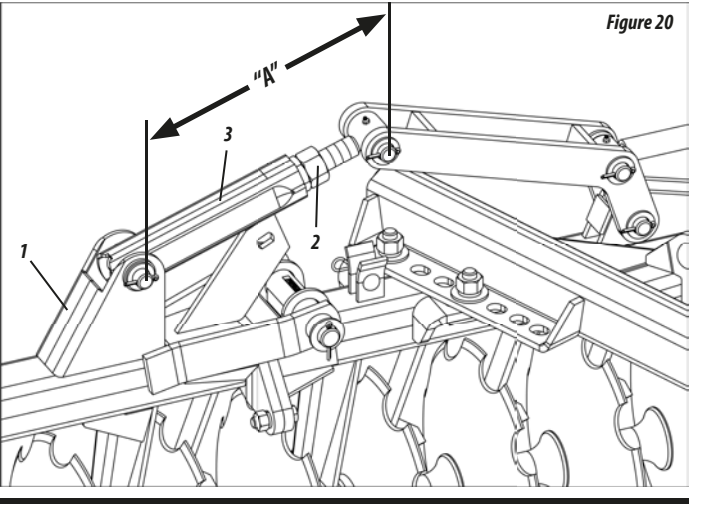


Figure 20

NOTE | ***The measurement "A" should be +/- 520 mm.***

HARROW DISPLACEMENT ADJUSTMENT (FIGURES 21)

The displacement of the NVAM / NVAP harrows must be performed when the harrows are not giving a perfect finish, meaning that they are leaving a trail of the tractor. In order for the harrows to work centralized with the traction line of the tractor, proceed as follows:

01 - Loosen the nuts (1), pressure washers (2), then remove the bolts (3) and move the header (4), performing the ideal adjustment.

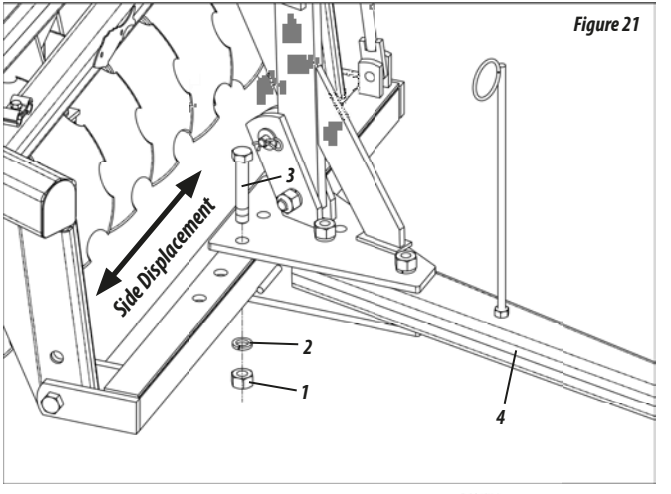


Figure 21

CROSSBAR ADJUSTMENT (FIGURE 22)

The stiffener of the NVAM / NVAP harrows has two holes on each side with the main purpose of leveling the header of the harrow in relation to the draw bar of the tractor.

01 - Increase Penetration.
02 - Reduce Penetration.

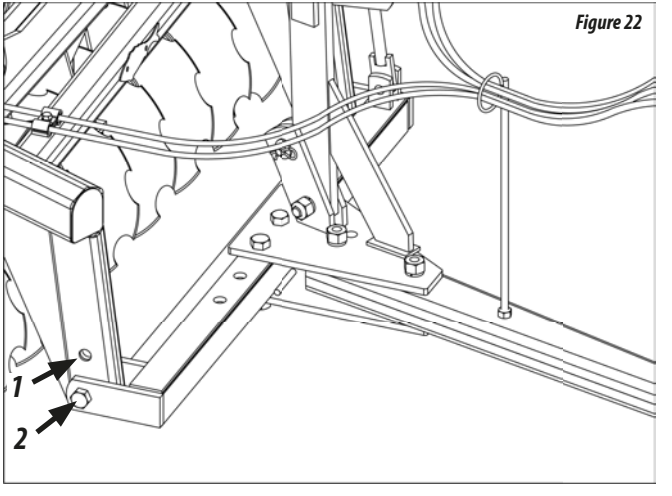
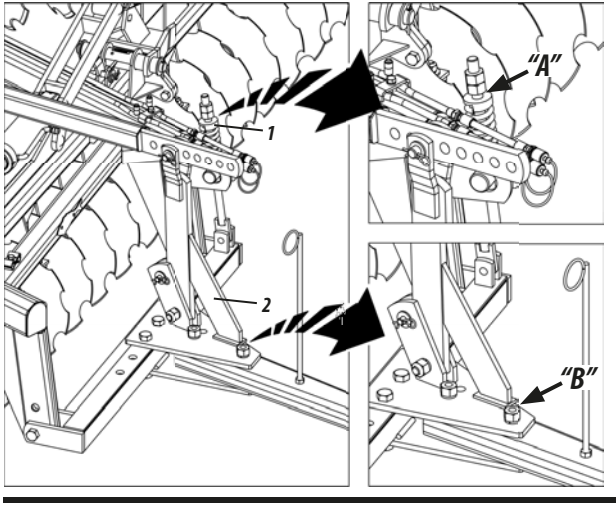


Figure 22

STABILIZER ROD AND STABILIZER ROD SUPPORT ADJUSTMENT (FIGURES 23)



Detail "A"

On the stabilizer rod (1), leave a gap of 10 to 20 mm between the nut and the surface of the spring **as shown in detail "A".**

Detail "B"

On the support (2) of the stabilizer bar, leave a gap of 10 to 20 mm between the stabilizer rod and the surface of the upper plate of the header **as shown in detail "B".**

Figures 23

CALCULATIONS

APPROXIMATE HOURLY PRODUCTION

- Use the formula below to calculate the approximate hourly production of the NVAM / NVAP harrows.

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

WHERE:

A = Area to be worked
L = Working width of the harrow (in meters)
V = Average speed of the tractor (in meters/hour)
F = Production Factor – 0.90
X = Value of the hectare – 10,000 m² (The value varies according to the region)

Example: A harrow has 56 discs, how many Ha will it produce in one working hour at an average speed of 7 km/h?

A = ?
L = 4.81m
V = 7,000m/h
F = 0.90
X = 10,000 m² (Calculated in hectares)

$$\frac{A = 4.81 \times 7{,}000 \times 0.90}{10{,}000} = 3.03 \text{ Ha/h}$$

The hourly production of the NVAM / NVAP harrow can vary due to factors that change the work pace (wetness and hardness of the soil, declivity of the land, inadequate adjustments and working speed).

APPROXIMATE HOURLY PRODUCTION TABLE

Model	*Spacing (mm)*	*Cut Width (mm)*	*Average Speed (m/h)*	*Production Factor*	*Approximate Production in:*
					Hectares
NVAM 36	175	3.00	7,000	0.90	1.89
NVAM 40	175	3.42	7,000	0.90	2.15
NVAM 42	175	3.60	7,000	0.90	2.26
NVAM / NVAP 42	200	4.10	7,000	0.90	2.58
NVAM / NVAP 44	175	3.76	7,000	0.90	2.36
NVAM / NVAP 44	200	4.30	7,000	0.90	2.70
NVAM / NVAP 48	175	4.10	7,000	0.90	2.58
NVAM / NVAP 48	200	4.70	7,000	0.90	2.96
NVAM / NVAP 52	175	4.45	7,000	0.90	2.80
NVAM / NVAP 52	200	5.10	7,000	0.90	3.21
NVAM / NVAP 56	175	4.81	7,000	0.90	3.03

Table 3

The formula to calculate the approximate production refers to the calculation of areas to be worked or areas worked per harrow. To know the time spent working an area of known value, divide the value of this area by the hourly production of the harrow.

Example: What is the time "X" spent on a NVAM / NVAP harrow of 52 discs that produces 35 hectares at an average speed of 7km/hr?

$$X = \frac{35\ Ha}{3.03\ Ha/h} = 11.55$$ approximate hours to work 35 hectares.

The hourly production of NVAM / NVAP harrow can vary due to factors that change the rhythm of work such as wetness and hardness of the soil, declivity of the land, inadequate adjustments and working speed, factors that are different from the table above, which were obtained with field work on soils with normal conditions.

OPERATIONS

OPERATING RECOMMENDATIONS

- The preparation of the tractor will enable you to save time besides having a better result in the field works. The suggestions below may be useful.

01 - After the first day of work with the NVAM / NVAP, retighten all the bolts and nuts and check the conditions of the pins and locks. Then carry out general retightening of all the screws and nuts after every 10 hours of work.

02 - Adjust the tractor according to the content of the instruction manual, always using the front and rear weights to stabilize the equipment.

03 - When using the NVAM / NVAP, it is important to check the coupling and cross-leveling system to make sure the discs will have the same penetration depth on the ground.

04 - After coupling and leveling, the next adjustments should be performed directly on the field, analyzing the land in terms of texture, wetness and types of operations to be executed with the NVAM / NVAP.

05 - Ensure that the harrow operator is trained and skilled to operate the harrow.

06 - The displacement speed of the harrow must be carefully controlled according to the conditions of the land.

07 - In case of doubts, never operate or handle the harrow, consult Post-Market.
Phone Number: 0800-152577 or e-mail: posvenda@baldan.com.br

HARROWING

Before operating the harrow, carry out complete revision, retightening all screws, nuts, hose terminals, shafts and especially the disc sections.

- When harrowing, always follow the terraces or contour line, starting operation with the terrace on the left side of the tractor operator.
- Do not turn to the right, the harrowed land must always be to the left of the tractor operator.

WARNING

Before operating the harrow, carry out complete revision, retightening all screws, nuts, hose terminals, shafts and especially the disc sections.

HARROWING FROM OUTSIDE TO INSIDE (FIGURE 24)

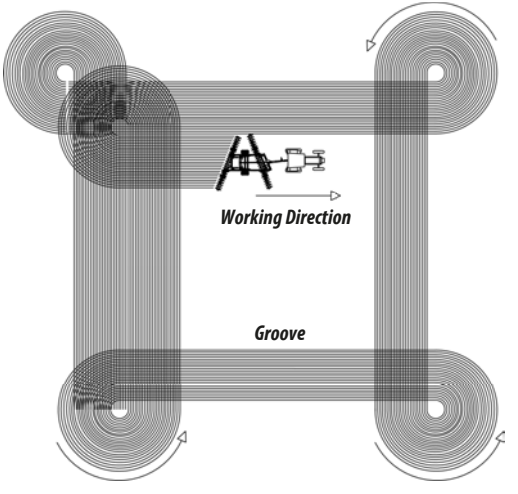


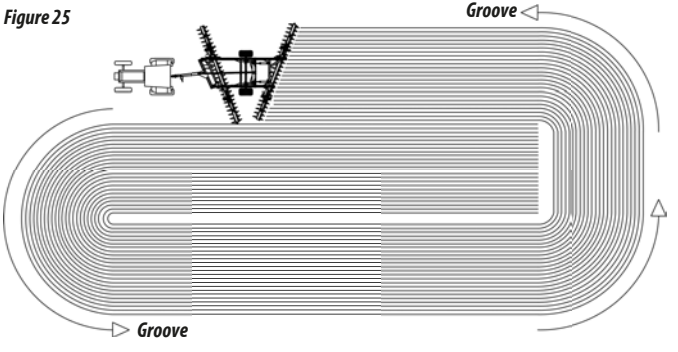
Figure 24

OPERATIONS

HARROWING FROM INSIDE TO OUTSIDE (FIGURE 25)

- Greater perfection is obtained in this direction. Start another plot when moving a lot on the headers.

Figure 25



PLOTS WITH CONTOUR LINES (FIGURE 26)

- On lands with contour line, it is normal to start two plots at a time, carefully starting the work with the level curve on the left side of the tractor operator. When reaching the middle of the level curve, start the other half of the level curve, and start another plot to reduce the use of fuel.

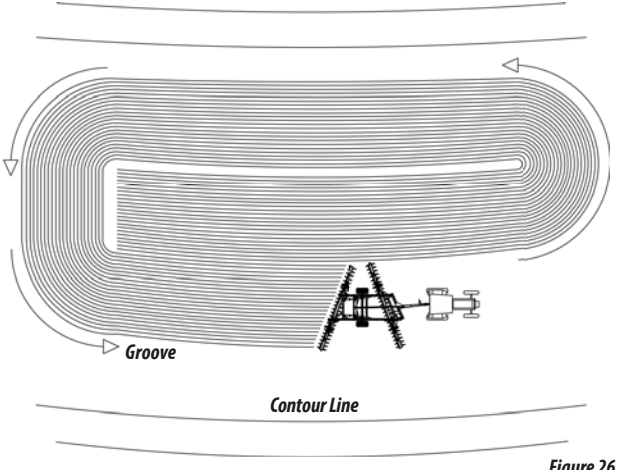


Figure 26

- NVAM / NVAP were developed to provide the maximum yield on the land conditions. Experience has shown that periodic maintenance of certain parts of the harrow is the best way to prevent problems; hence we suggest the check.

WARNING ***Constantly check the nuts and bolts, and retighten if necessary.***
General retightening maintenance of the equipment should be performed every 8 working hours.

TIRE PRESSURE (FIGURE 27)

The tires must always be correctly calibrated to avoid premature wears by excess or lack of pressure, and by ensuring precision in the distribution.

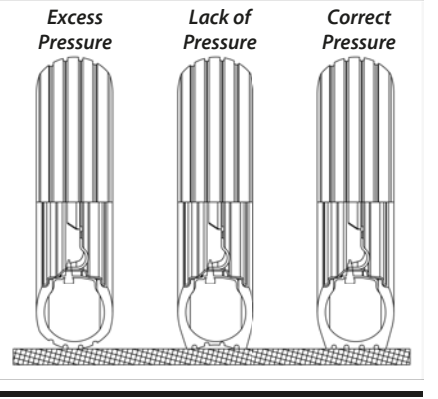


Figure 27

WARNING

The recommended calibration of 60 lb/inch2 are only for tires model 750 x 16 10 ply supplied with the NVAM / NVAP. Do not exceed the recommended calibration when calibrating the NVAM / NVAP tires. When purchasing the harrow without tires, it is recommended to consult the manufacturer on the ideal calibration for the model of tire to be used on the harrow.

NOTE ***The tire pressure of the tractor should be according to the pressure recommended by the manufacturer.***

LUBRICATION (TABLE 2)

Lubrication is indispensable for a good performance and higher durability of the moving parts of the harrow, which helps save maintenance costs.
Before executing the operation, carefully lubricate all greasers, always observing the lubrication intervals in the pages below. Check the quality of the lubricant in relation to its efficiency and purity, avoiding the use of products contaminated with water, soil and other agents.

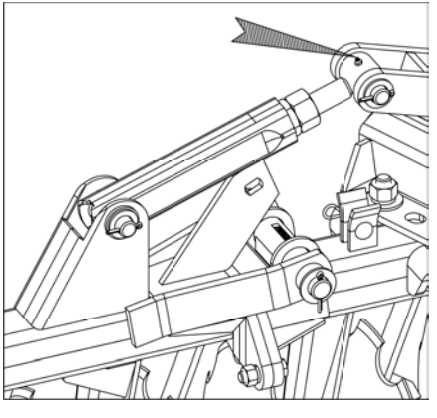
IMPORTANT ***S'il y a d'autres fabricants et ou marques équivalentes qui ne figurent pas sur ce tableau, consulter le guide technique du fabricant.***

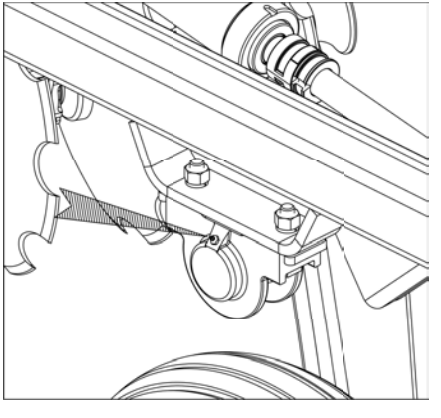
TABLE OF GREASE AND EQUIVALENT PRODUCTS

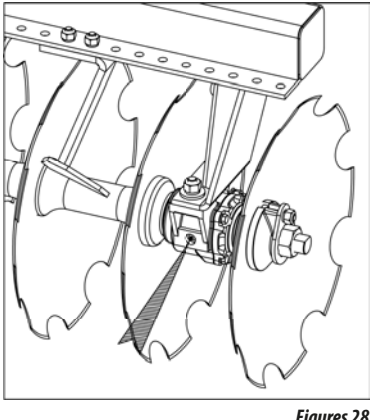
Manufacturer	*Types of grease recommended*
Petrobrás	Lubrax GMA 2
Atlantic	Litholine MP 2
Ipiranga	Super Graxa Ipiranga Ipíranga Super Graxa 2 Ipiflex 2
Castrol	LM 2
Mobil	Mobilgrease MP 77
Texaco	Marfak 2 Agrotex 2
Shell	Retinax A Alvania EP 2
Esso	Multipurpose grease H
Bardahl	Maxlub APG 2 EP

Tableau 02

LUBRICATE EVERY 24 HOURS OF WORK (FIGURES 28)



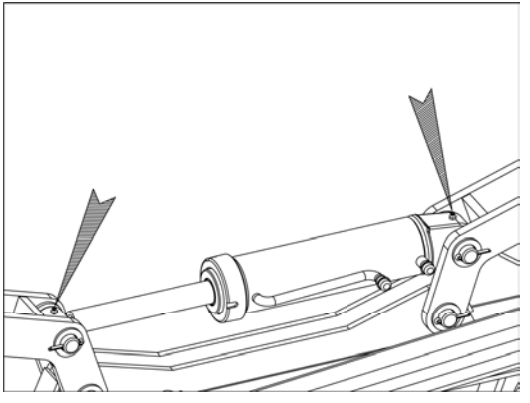


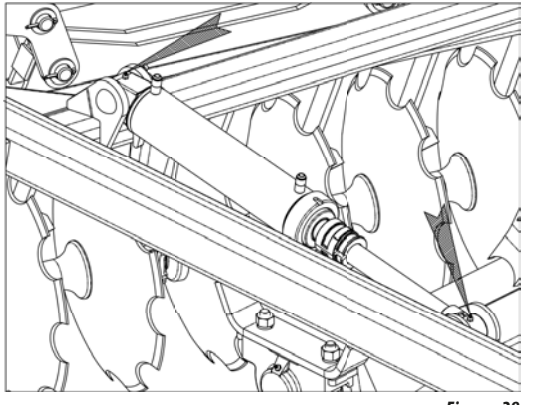


Figures 28

WARNING | ***When lubricating the NVAM / NVAP, do not use excess quantity of new grease. Add a sufficient amount.***

LUBRICATE EVERY 24 HOURS OF WORK CONTINUATION (FIGURES 28)

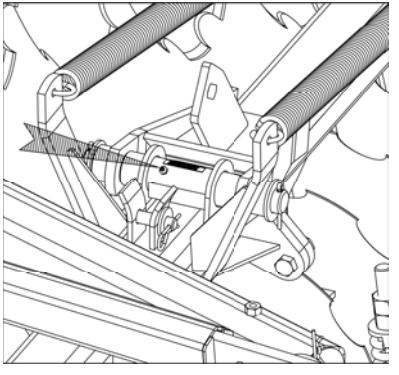




Figures 28

WARNING *When lubricating the NVAM / NVAP, do not use excess quantity of new grease. Add a sufficient amount.*

LUBRICATE EVERY 24 HOURS OF WORK CONTINUATION (FIGURES 28)



Figures 28

LUBRICATE EVERY 60 HOURS OF WORK (FIGURE 29)

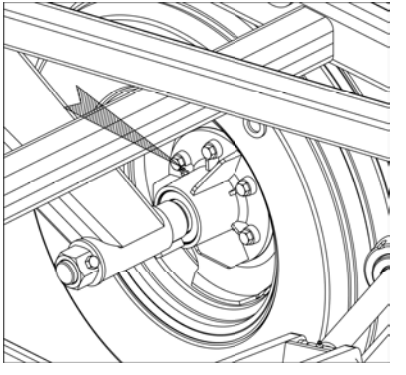


Figure 29

WARNING *When lubricating the NVAM / NVAP, do not use excess quantity of new grease. Add a sufficient amount.*

BEARING ADJUSTMENTS (FIGURE 30)

When the bearings become slack, proceed as follows to adjust them:

01 - Remove the washer (1).

02 - Then loosen the bolts (2) and remove the cover from the bearing (3).

03 - After, remove one or two joints (4) from the bearing cover (3). Put back the bearing cover (3) and retighten.

04 - If the slackness persists, face the bearing cover (3) to increase the adjust, and then mount it on the bearing with as many joints considered necessary.

05 - The bearing should rotate freely without slacks.

⚠ *Do not mount the bearing without joints (4).*

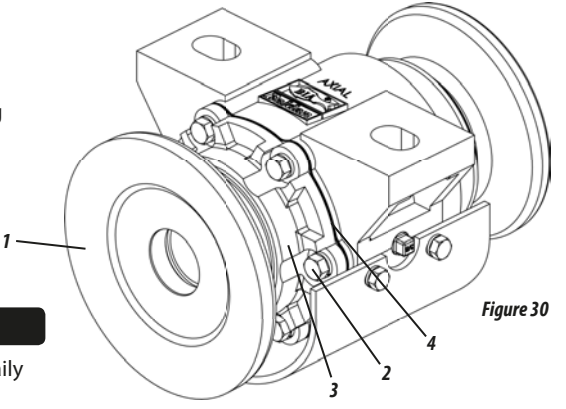


Figure 30

BEARING LUBRICATION

- On the first days of work with the NVAM / NVAP, check the oil level of the bearings daily and then check it after every 120 hours of work.
- The oil should be changed after every 1200 hours of work. Use oil for transmission 90 API GL4, MIL-L-2105; SAEJ306, May/81; SAE 80W,90 and 140.

⚠ *The ideal oil level is the level at which it reaches the hole of the plug. Find a flat place when checking the oil level of bearing.*

MAINTENANCE

PRECAUTIONS

Before each work, check the conditions of all pins, bolts, bearings, discs and sections. Retighten them when necessary.
The displacement speed must be carefully controlled according to the conditions of the land.

The NVAM / NVAP are used in various applications, requiring know-how and attention during its handling.

Only site conditions can determine the best way of operating the NVAM / NVAP.

Use the suitable methods and tools to mount or dismount any part of the NVAM / NVAP.

Always check if the parts do not present wears. If replacement is required, always demand for original Baldan parts.

Keep the discs of the NVAM / NVAP always sharp.

IMPORTANT | ***Appropriate and periodic maintenance are necessary to ensure the long life of the equipment.***

GENERAL CLEANING

When storing the NVAM / NVAP, carry out general cleaning and wash it. Check if the paint is not worn, otherwise apply a general coat of paint, apply protection oil and completely lubricate the NVAM / NVAP.
Completely lubricate the harrow. Check all the moving parts of the NVAM / NVAP for wear or looseness and perform the necessary adjustments or replacement of the parts, leaving the harrow ready for the next operation.
After all the maintenance cares, keep your NVAM / NVAP on a flat surface, in a sheltered and dry location away from animals and children.
We recommend washing the NVAM / NVAP at the start of the works.

IDENTIFICATION

PRODUCT IDENTIFICATION (FIGURE 31)

- To consult the parts catalog or request for technical service from Baldan, always indicate the model (1), serial number (2) and date of manufacture (3) informed on the identification plate of the NVAM / NVAP.

ALWAYS DEMAND ORIGINAL BALDAN PARTS

Figure 31

WARNING

The drawings contained in this instruction manual are for illustrative purposes only. To enable a better view and detailed instruction, some drawings in this manual had the safety devices removed (covers, protections, etc.). Never operate the seed drill without these devices.

MARKETING
Edition of Catalogs and Manuals

Code: 60550103810
Revision: 00
CPT: NVA00615

CONTACT

In case of doubts, never operate or handle the NVAM / NVAP and consult Post-Market.
Phone Number: 0800-152577
E-mail: posvenda@baldan.com.br

IDENTIFICATION

PRODUCT IDENTIFICATION

Identify the data below in order to always have the correct information on the life of your NVAM / NVAP.

Owner: _____

Dealer: _____

Farm: _____

City: _____ ***State:*** _____

Warranty Certificate Number: _____

Model: _____

Serial Number: _____

Purchase date: ____/____/____ ***Invoice Number:*** _____

NOTES

WARRANTY CERTIFICATE

BALDAN IMPLEMENTOS AGRÍCOLAS S/A guarantees the dealer the normal functioning of the equipment for a period of six (6) months as from the date of delivery on the sales invoice to the first final consumer.
During this period ***BALDAN*** is committed to repairing material and/or manufacturing defects under its responsibility, which includes manual labor, freights and other expenses under the responsibility of the dealer.
During the warranty period, the request and replacement of eventual defective parts should be executed by the regional dealer, who will send the defective part to ***BALDAN*** for analysis.
When this procedure is not possible and the problem solving capacity of the dealer is exhausted, the dealer must request the support from ***BALDAN*** Technical Assistance through the specific form distributed to dealers.
After Baldan Technical Assistance analyzes the replaced items and concludes that it is not a warranty issue, the dealer becomes responsible for the costs related to the replacement as well as the expenses with material, trip including accommodation and meals, accessories, lubrication used and other expenses resulting from calling Technical Assistance, and Baldan is authorized to make the respective billing in the name of the dealer.
Any repair made by the dealer on the product during the warranty period will only be authorized by ***BALDAN*** through prior presentation of the budget describing the parts and manual labor to the executed.
The product subjected to repairs or modifications at official dealers not belonging to the network of ***BALDAN*** dealers as well as the application of non genuine parts or components to the user product are not included in this deed.
The present warranty becomes void when it is confirmed that the defect or damage is the result of undue use of the product, non-observation of the instructions or the inexperience of the operator.
It is agreed that the present warranty does not cover tires, polyethylene hoppers, cardans, hydraulic components, etc, which are equipments under warranty by their manufacturers.
The manufacturing and/or material defects subject to this warranty deed will not include, under any circumstance, reason for termination of purchase and sales contract or for indemnification of any kind.
BALDAN reserves the right to change and/or improve the technical characteristics of its products without prior warning and without obligation of doing so with the previously manufactured products.

CERTIFICATE OF INSPECTION AND DELIVERY

- ***SERVICE BEFORE DELIVERY:*** This equipment was carefully prepared by the sales organization, inspected in all its parts according to the prescriptions of the manufacturer.
- ***DELIVERY SERVICE:*** The user was informed on the effective warranty deeds and instructed on the use and maintenance precautions.
- I confirm that I was informed on the effective warranty terms and instructed on the use and maintenance precautions.

Equipment: _____ *Serial Number:* _____

Date: _____ *Invoice Number:* _____ *Dealer:* _____

City: _____ *State:* _____ *CEP (Zip Code)* _____

Owner: _____ *Phone:* _____

Address: _____ *Number:* _____

City: _____ *State:* _____

E-mail: _____ *Sale date:* _____

1st Owner

Dealer Signature / Stamp _____

CERTIFICATE OF INSPECTION AND DELIVERY

- ***SERVICE BEFORE DELIVERY:*** This equipment was carefully prepared by the sales organization, inspected in all its parts according to the prescriptions of the manufacturer.
- ***DELIVERY SERVICE:*** The user was informed on the effective warranty deeds and instructed on the use and maintenance precautions.
- I confirm that I was informed on the effective warranty terms and instructed on the use and maintenance precautions.

Equipment: _____ *Serial Number:* _____

Date: _____ *Invoice Number:* _____ *Dealer:* _____

City: _____ *State:* _____ *CEP (Zip Code)* _____

Owner: _____ *Phone:* _____

Address: _____ *Number:* _____

City: _____ *State:* _____

E-mail: _____ *Sale date:* _____

2nd Dealer

Dealer Signature / Stamp _____

CERTIFICATE OF INSPECTION AND DELIVERY

- ***SERVICE BEFORE DELIVERY:*** This equipment was carefully prepared by the sales organization, inspected in all its parts according to the prescriptions of the manufacturer.
- ***DELIVERY SERVICE:*** The user was informed on the effective warranty deeds and instructed on the use and maintenance precautions.
- I confirm that I was informed on the effective warranty terms and instructed on the use and maintenance precautions.

Equipment: _____ *Serial Number:* _____

Date: _____ *Invoice Number:* _____ *Dealer:* _____

City: _____ *State:* _____ *CEP (Zip Code)* _____

Owner: _____ *Phone:* _____

Address: _____ *Number:* _____

City: _____ *State:* _____

E-mail: _____ *Sale date:* _____

3rd - Manufacturer

Please send this filled out copy to BALDAN within a maximum of 15 days.

Dealer Signature / Stamp _____

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: 15993-000 | Matão-SP | Brazil
Phone Number: (0**16) 3221-6500 | Fax: (0**16) 3382-6500
Home Page: www.baldan.com.br | e-mail: sac@baldan.com.br
Export: Phone Number: 55 16 3321-6500 | Fax: 55 16 3382-4212 3382-2480
e-mail: export@baldan.com.br

60550103810

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