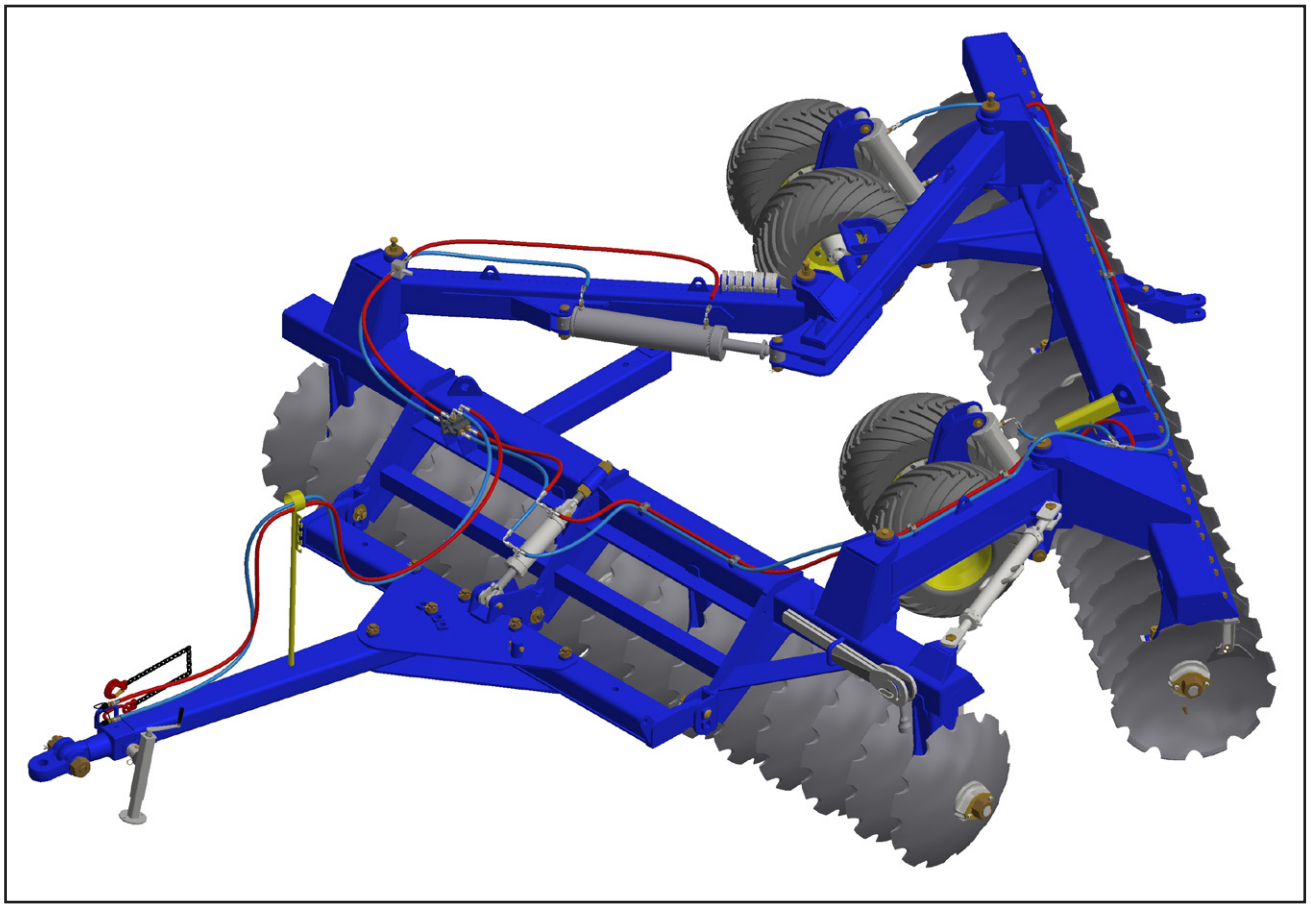
TATU MARCHESAN

INSTRUCTIONS MANUAL



GAPCW 8013
GASPCW 9017

IDENTIFICATION

Dealer: _____

Owner: _____

Firm / Farm: _____

City: _____ State: _____

No. of the Certificate of Guarantee: _____

Serial / No.: _____

Date: ____ / ____ / ____ Invoice No.: _____

Product: _____

Notes: _____

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Introduction

GAPCW 8013 and GASPCW 9017 disk harrows are designed to work in any kind of soil, with excellent application on the soil preparation with high levels of residues, such as: rice, sunflower, wheat and sugar cane, operating with great tractors and incorporating stubbles to greater depths.

The heavy-duty structure with proper dimensioning is made of bent steel plates joined by a good penetration and fine finishing, with tough parts in the mechanical load concentrations, which adds up to the quality of all its components, a common feature on every TATU equipment.

These harrows transportation are made through an efficient wheelset system composed on tires and hydraulic cylinder, which allows long-distance transportation. The wheelset system also activates the operation by the fast and precise working depth control, as well as facilitates the accomplishment of maneuvers during the service.

This instructions manual contains the necessary information for the best performance of these harrows. The operator must carefully read the entire manual before working with the equipment. Also, read and understand the safety recommendations.

For any further clarification or in the event of technical problems that may arise during the service, consult your dealer and the Technical Support department of the factory. They can ensure the fully functioning of your TATU disk harrow.

TATU
MARCHESAN

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To the owner

The acquisition of any TATU product assures to the original purchaser the following rights:

• Warranty certificate;

• Instructions manual;

• Technical assistance by the dealer on equipment delivery.

However, the owner must check the condition of the equipment on delivery, as well as knowing the warranty terms.

Special attention should be given to the safety recommendations, operation precautions and maintenance of the equipment.

The instructions in this manual indicates how to get the best performance and allow the operator to get maximum income, increasing the equipment lifetime.

This manual should be read by operators and maintenance staff.

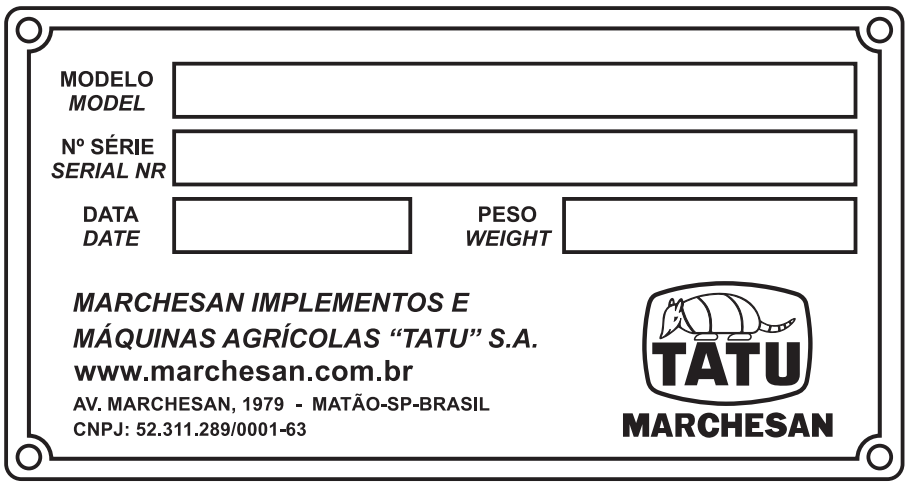
Important

- **Only people who own a full knowledge of the tractor and equipment must operate them;**
- **Marchesan is not responsible for any damage caused by accident on transporting, incorrect utilization or inadequate storage, either by negligence and/or lack of experience from any person;**
- **Marchesan is not responsible for any damage caused by unpredictable situations or the incorrect use of the equipment.**

General information

Right and left hand side indication are made observing the equipment from the rear.

To order any parts or request technical assistance services, it is required to provide the data contained on the nameplate, which is located on the equipment frame.



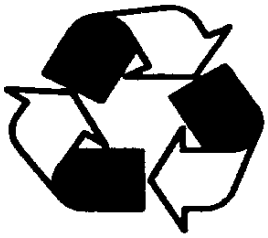
NOTE **The warranty shall not be applied to any equipment, or any parts thereof, which has been altered elsewhere than at the place of manufacture or which the original purchaser thereof, at retail, has used or allowed to be used parts, not made or supplied by Marchesan S/A.**

To the operator

Be careful with the environment

Dear user!

Respect the ecology. Do not throw trash away. This gesture of goodwill helps to protect our environment.



Products such as oil, fuel, filters, batteries and others are spilled to the soil and can penetrate to the underground layers, compromising nature. Ecological and conscious disposal of them should be done.

Working safely

- **Security aspects must be carefully observed to avoid accidents.**
- **This symbol is a warning to prevent accidents.**
- **The instructions under this symbol refers to the safety of the operator or third parties, therefore they should be carefully read and observed.**

These disk harrows are simple to operate, requiring however the basic and essential cautions to their handling.

Always keep in mind that safety requires constant attention, observation and prudence during the transportation, maintenance and storage.

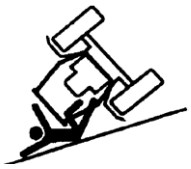
Read and understand the information before making any adjustment or maintenance.

Have extreme caution when operating with the power take-off (PTO). Do not get closer during operation.

To the operator

Never use your bare hands to check hydraulic leaks, the high pressure can cause injuries.

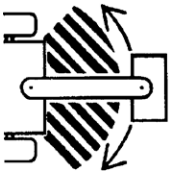
Never attempt to change the adjustments, clean or lubricate the equipment when the same is switched on or in movement.



Be careful while driving on slopes. Risk of overturn.

Prevent that chemical products (i.e.: fertilizers, treated seeds) make any contact with your skin or clothes.

Keep access and work places clean or free from oil and grease. Risk of accidents.

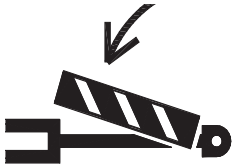


Never transport the equipment on highways or paved roads during the night. Avoid that the tractor wheels touch the drawbar in sharp turns.

The presence of any other people on the tractor or equipment is stricly forbidden.

Have extreme caution when driving under electrical power lines. Any contact may result in severe shocks, injuries or death.

For your protection and safety, always wear adequate clothes and footwear while operating the equipment.



Always use the safety locks to carry out maintenance operations and to transport the equipment.

To the operator

- Only trained and qualified personnel are allowed to operate the equipment.
- While working or during transportation, only the presence of the operator is allowed on the tractor.
- Do not allow children to play or to get over the equipment while it is operating, during transportation or storage.
- Have full knowledge of the soil before starting to work. Use the speed which is suitable to the conditions of the ground. Provide the delineation of obstacles or hazardous locations.
- Use personal protective equipment (PPE).
- Wear appropriate clothes and footwear. Avoid clothes that are either loose or hanging from the body, which may become entangled in moving parts.
- Never operate the equipment without its **protective devices**.
- Be careful while hitching the equipment to the tractor.
- Wear appropriate gloves near the disc blades.
- When setting the harrow to transport position, check if there are no people or animals close or under the equipment.
- Never attempt to change the adjustments, clean or lubricate the equipment while it is moving.
- In case of emergency, know how to stop the tractor and harrow quickly.
- Always shut down the engine, remove the key and use the handbrake before leaving the tractor seat.
- Only drive the equipment using a tractor with appropriate power.
- Carefully check the transport width on narrow locations.
- Whenever you unhitch the equipment, either in the field or shed, do it on a flat and firm surface and use the parking stands. Make sure the equipment is properly supported.
- Do not drive the equipment under the influence of alcohol or any sooting/ stimulating medicine, as it may result in a serious accident.
- In case of a fire outbreak or any possible hazard, the operator must leave the area as fast as possible and look for a safe place. Always have emergency numbers at hands.
- Please check the general safety instructions on the back cover of this manual.

Truck or trailer transportation

Marchesan does not advise the equipment traffic on highways, because this practice involves serious security risks in addition to being prohibited by the current existing traffic law. The transportation for long distances should be done on truck, trailer or other by following these safety guidelines:

- Use adequate ramps to load or unload the equipment. Do not make the loading on ditch banks, it can cause a serious accident.

- When lifting with a hoist, use the appropriate points to lift.

- Fasten the moving parts that may get loose and cause accidents.

- Underpin the equipment wheels appropriately.

- Use chock blocks and safety chains to secure the equipment to the truck or trailer during the transport.

- After 8 to 10 km transporting, please inspect the load condition. Repeat this procedure every 80 to 100 km. Give more attention when transporting the equipment on rough roads, slopes and other adverse conditions.

- Always be careful with the load height, especially when passing under electrical power lines, bridges and others.

- Check all laws and regulations regarding the height limits and load width while transporting the equipment to the truck or trailer. If necessary use banners, lights and other devices in order to give adequate warning to the other drivers.

Safety stickers

The safety stickers warn about the equipment points that require more attention and they should be kept in good repair. If these stickers become damaged or illegible, replace them. Marchesan provide stickers, upon request and indication of the respective serial number.

PERIGO / DANGER / PELIGRO

Para evitar acidentes, não faça regulagens com o equipamento em movimento. Para manutenção e limpeza, desligue o motor do trator.

In order to avoid accidents, do not carry out adjustments with the equipment in movement. For maintenance and cleaning, switch off the tractor engine.

Para evitar accidentes, no haga reglajes con el equipo en movimiento. Para mantenimiento y limpieza, apague el motor del tractor.

05.03.03.1739

ADVERTÊNCIA / WARNING / ADVERTENCIA

Para evitar acidentes, instale as travas dos cilindros antes do transporte ou antes de efetuar serviços no equipamento.

In order to avoid accidents activate cylinder locks before transportation or carrying out any service on the equipment.

Para evitar accidentes, instale las trabas de los cilindros antes del transporte o antes de efectuar trabajos en el equipo.

05.03.03.1738

ATENÇÃO / ATTENTION / ATENCIÓN

LEIA ATENTAMENTE AS INSTRUÇÕES ANTES DA MONTAGEM, OPERAÇÃO OU MANUTENÇÃO DO EQUIPAMENTO.

- Tracione o equipamento somente com trator de potência adequada.
- Tenha extrema cautela quando trabalhar com os discos ou próximos deles. Utilize luvas.
- Pare o serviço antes de efetuar qualquer manutenção ou ajuste. Nunca faça reparos ou retire obstáculos da grade com o trator em movimento.
- Não permita a aproximação de pessoas quando estiver operando, ajustando, abrindo ou fechando a grade. Fique longe das partes móveis quando estiver erguendo ou abaixando a grade.
- A barra de tração do trator deve permanecer solta no trabalho e fixa no transporte.
- Durante o trabalho faça manobras somente pelo lado esquerdo.
- Reaperte todas as porcas e parafusos diariamente durante a primeira semana de uso. Depois, inspecione periodicamente. Inspecione o aperto dos eixos das seções de discos depois das primeiras 10 horas de uso. Mantenha os eixos das seções constantemente apertados.
- Durante o trabalho ou transporte nunca permita passageiros no trator ou no equipamento.
- Verifique sempre se os pinos e contrapinos estão travados.
- Para transportar a grade em maiores distâncias, é necessário utilizar as travas para transporte nas hastes dos cilindros hidráulicos. Verifique também o aperto das rodas periodicamente, especialmente antes de transportar a grade.
- A velocidade segura de transporte é de 20 km/h. Nunca transporte a grade em velocidade superior a 30 km/h.
- Alivie a pressão do comando antes de soltar os engates rápidos e ao fazer qualquer verificação no circuito hidráulico.

READ AND UNDERSTAND THE INSTRUCTIONS BEFORE ASSEMBLING, OPERATING OR SERVICING THE EQUIPMENT.

- Only drive the equipment using tractors with appropriate power.
- Use extreme caution when working with or around the disc blades. Wear protective gloves.
- Always stop working before attempting to service or make an adjustment. Never service or remove obstacles from the equipment with the tractor running.
- Do not allow any person to be near the equipment when operating, adjusting and closing. Stand off all moving parts when raising or lowering the harrow.
- The tractor hitch bar must remain loose at work and fixed on transportation.
- When operating, make turns only to the left side.
- Tighten all nuts and bolts daily during the first week of operation. Thereafter, inspect them periodically. Inspect the gang axis tightening after the first 10 hours of operation and periodically afterwards. Maintain the gang shaft tightened at all time.
- During work or trasportation, the presence of passengers is not allowed on the tractor or equipment.
- Always check if the pins and cotter are locked.
- To transport the harrow over long distances, it is necessary to use the transport locks, which are attached to the hydraulic cylinders. Also, check the tires grip periodically, especially before transporting the harrow.
- The safe transport speed is 20 kilometers per hour (12,4 miles per hour). Never transport in excess of 30 kilometers per hour (18,6 miles per hour).
- Relieve the control valve pressure before disconnecting the quick couplers and when doing any verification in the hydraulic cylinder.

LEIA Y ENTENDER LAS INSTRUCCIONES ANTES DE ARMAR, OPERACIÓN Y MANTENIMIENTO DEL EQUIPO.

- Tracione el equipo solamente con tractor de potência adecuada.
- Tenga mucho cuidado cuando se trabaja con los discos o cerca de ellos. Utilizar guantes.
- Parar el servicio antes de cualquier mantenimiento o ajuste. No haga reparaciones o remover los obstáculos de la rastra con el tractor en movimiento.
- No permita el acercamiento de las personas durante la operación, ajuste e en la abertura o cierre de la rastra Manténgase alejado de las partes móviles cuando subir y bajar la rastra.
- La barra de tracción del tractor debe permanecer suelta en el trabajo y fija en el transporte.
- Durante el trabajo haga maniobras solamente por el lado izquierdo.
- Reapretar todas las tuercas y tornillos diariamente durante la primera semana de uso. Después, inspeccionar periodicamente. Inspeccionar el aprieto del eje de las secciones de discos después de las primeras 10 horas de uso. Mantenga los ejes de las secciones constantemente apretados.
- Durante el trabajo o transporte no permita pasajeros en el tractor o el el equipo.
- Verifique siempre se los pernos y contrapernos están trabados.
- Para transportar la rastra en mayores distancias, es necesário utilizar las trabas para transporte en los vástagos de los cilindros hidráulicos. Verificar también el aprieto de las ruedas periódicamente, especialmente antes de transportar la rastra.
- La velocidad de transporte segura es de 20 km/h. Nunca transporte la rastra en velocidad superior a 30 km/h.
- Alivie la presión del comando antes de soltar los enganches rápidos y al hacer cualquier verificación en el circuito hidráulico.

05.03.03.1840

ATENÇÃO / ATTENTION / ATENCIÓN

Leia o manual antes de iniciar o uso do equipamento.

Read the manual before attempting to work with the equipment.

Lea el manual antes de iniciar el uso del equipo.

05.03.03.1428

LUBRIFICAR E REAPERTAR DIARIAMENTE
LUBRICATE AND TIGHTEN DAILY
LUBRICAR Y REAPRETAR DIARIAMENTE

05.03.03.1827

Sticker set

Model	Serial number
GAPCW 8013	**05.03.06.1568**
GASPCW 9017	**05.03.06.1175**

Data sheet

Type: .....Hinge Wheel Offset Disk Harrow

Model: .....**GAPCW 8013**

Spacing between disc blades (mm): 340

Disc blades dimension: ..... Ø 32" x 9 mm

..... Ø 34" x 9 mm

..... Ø 36" x 9 mm

Disc blades type: .....Concave notched

Bearings - Length: .....330 mm

- Type: .....Tapered roller bearings

Quantity of oil on the bearings: .....650 ml

Spacer spools - Length: .....330 mm

- Type: ..... Cast

Axle diameter: .....Ø 63.5 mm (2.1/2")

Hitching type: ..... Drawbar

Tires: ..... 400/60 - 14 L (50 PSI)

Working speed: .....5 to 9 km/h

Model	Number of disc blades	Cutting width (mm)	Disc blades		Weight (kg)	Tractor required (cv)
			Dimensions	Spacing		
GAPCW 8013	31	4885	32" x 9 mm 34" x 9 mm 36" x 9 mm	340 mm	7413	340 - 360
	35	5565			8328	380 - 400
	39	6245			8768	400 - 440
	41	6585			8804	440 - 460
	45	7265			9472	460 - 480

NOTE

- **The weights above were obtained using Ø 36' x 9 mm disc blades.**
- **The required tractor power may suffer variations according to the soil type.**

Data sheet

Type: ..... Grade Aradora

Model: ..... **GASPCW 9017**

Spacing between disc blades (mm): 440

Disc blades dimension: ..... Ø 34" x 9 mm

..... Ø 34" x 12 mm

..... Ø 36" x 12 mm

Disc blades type: ..... Concave notched

Bearings - Length: ..... 430 mm

- Type: ..... Tapered roller bearings

Quantity of oil on the bearings: ..... 980 ml

Spacer spools - Length: ..... 430 mm

- Type: ..... Cast

Axle diameter: ..... Ø 63.5 mm (2.1/2")

Hitching type: ..... Drawbar

Tires: ..... 400/60 - 14 L (50 PSI)

Working speed: ..... 5 to 9 km/h

Model	Number of disc blades	Cutting width (mm)	Disc blades		Weight (kg)	Tractor required (cv)
			Dimensions	Spacing		
GASPCW 9017	23	4610	34"x 9 mm	440 mm	7645	290 - 300
	25	5050	34"x 12 mm		8157	310 - 420
	29	5930	36"x 12 mm		9135	380 - 400

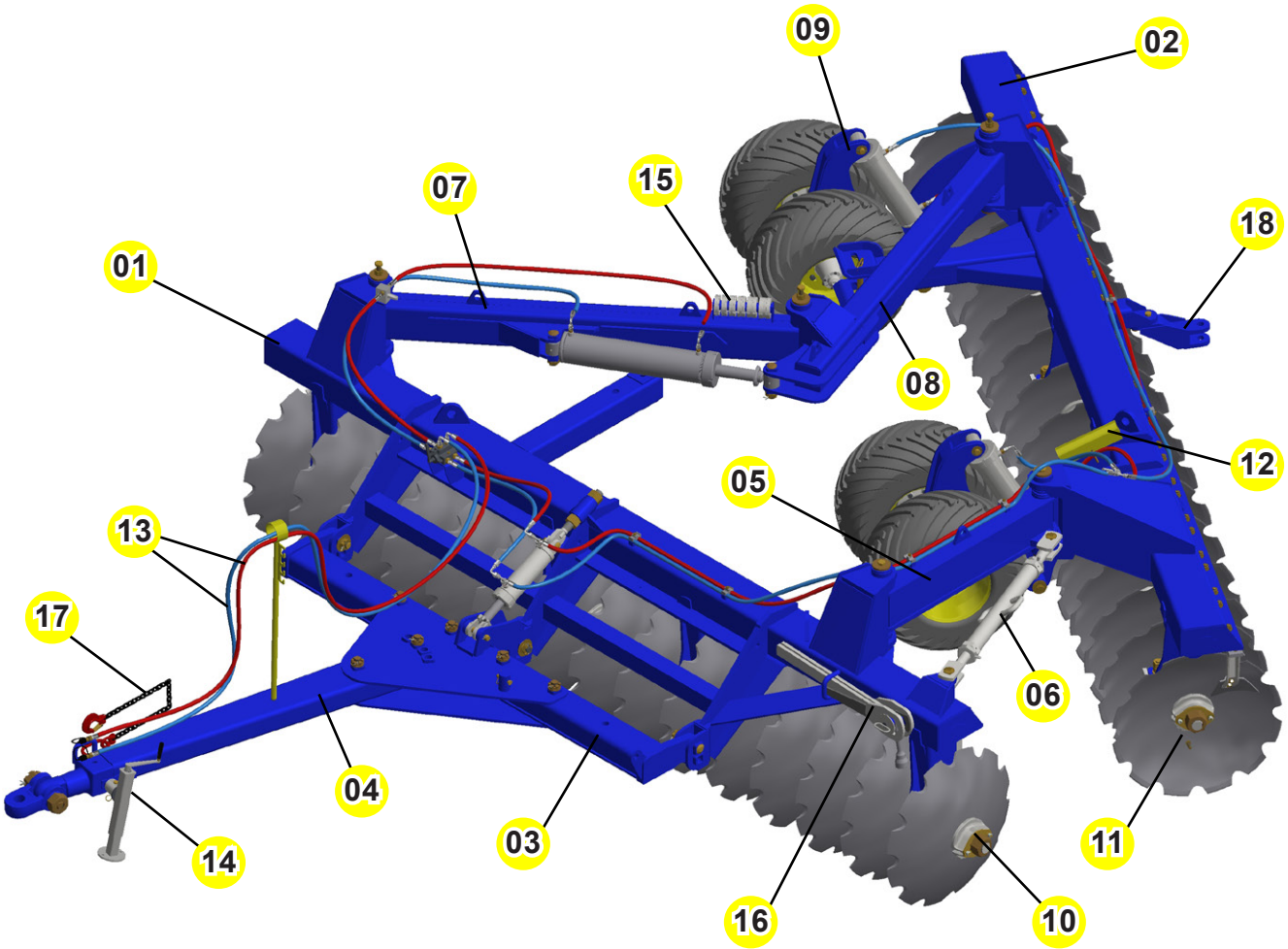
NOTE

- **The weights above were obtained using Ø 34' x 12 mm disc blades.**
- **The required tractor power may suffer variations according to the soil type.**

Components

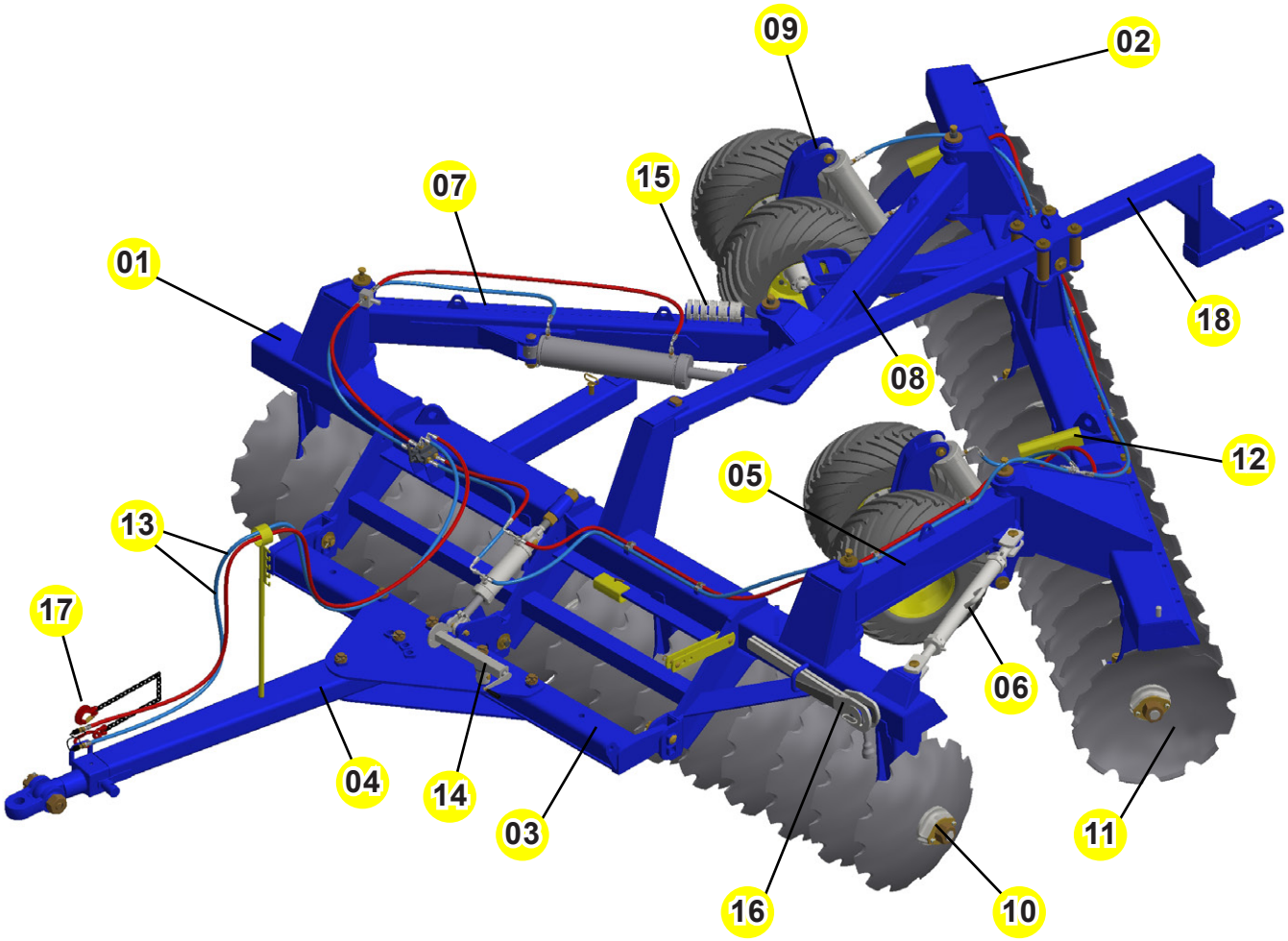
GAPCW 8013 (31 - 45 discs) / GASPCW 9017 (23 - 29 discs)

01 - Front disc carrier
02 - Rear disc carrier
03 - Hitch bar
04 - Drawbar
05 - Junction axle
06 - Extensor junction
07 - Front stabilizer bar
08 - Rear stabilizer bar
09 - Complete wheelset
10 - Front disc gang
11 - Rear disc gang
12 - Transport lock
13 - Complete hydraulic circuit
14 - Jack
15 - Rod stop
16 - Wrenches
17 - Safety chain
18 - Rear hitch



GAPCW 8013 (31 - 45 discs) / GASPCW 9017 (23 - 29 discs)

01 - Front disc carrier
02 - Rear disc carrier
03 - Hitch bar
04 - Drawbar
05 - Junction axle
06 - Extensor junction
07 - Front stabilizer bar
08 - Rear stabilizer bar
09 - Complete wheelset
10 - Front disc gang
11 - Rear disc gang
12 - Transport lock
13 - Complete hydraulic circuit
14 - Jack
15 - Rod stop
16 - Wrenches
17 - Safety chain
18 - Rear hitch (optional)



NOTE Use the rear hitch (18) to move away the rear frame to another equipment.

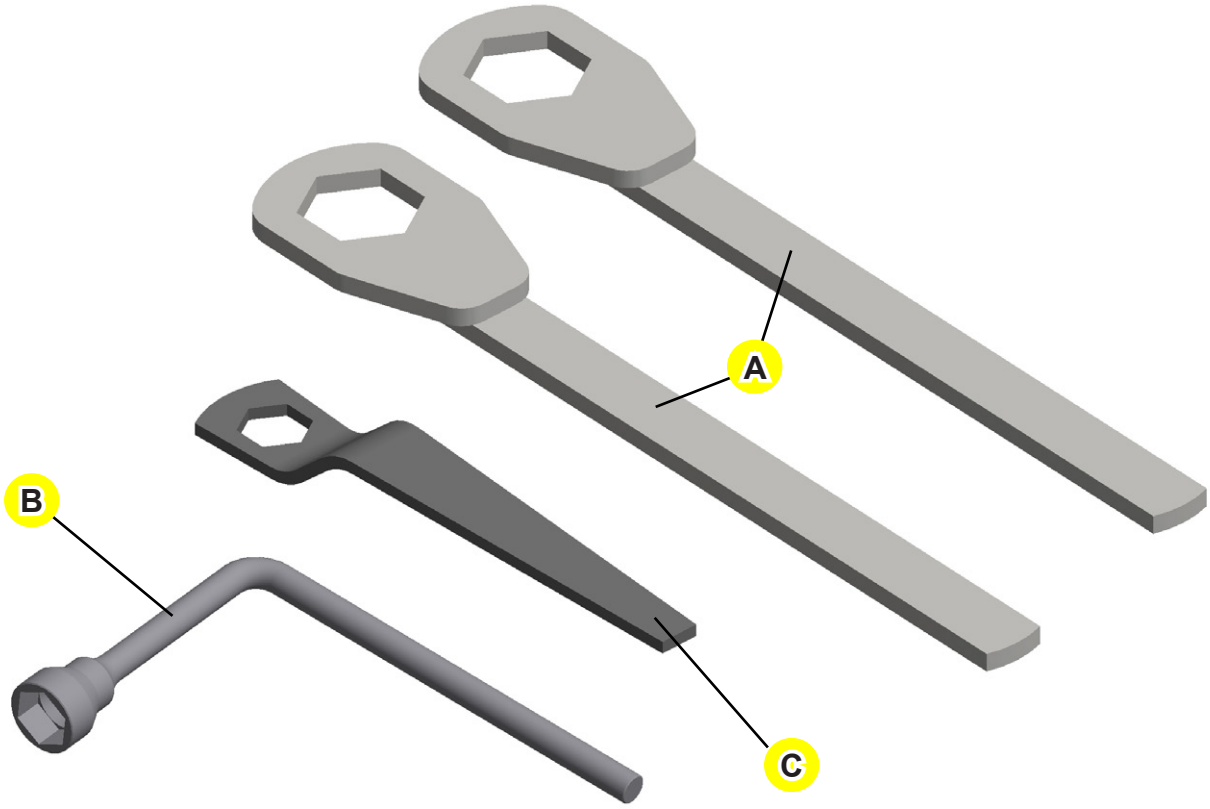
First of all, put the parts in a clean place to identify them easier. Check the parts using the list that comes inside the packing box.

Using the set of wrenches

Use two box end wrenches (A) to tighten the nuts of the disc gang, being one to hold the axle nut on one side while the other tighten the nut to the other end, thereby preventing the axle from rotating.

Use the box end wrench (B) to tighten the nuts on the bearing bolts.

Use the box end wrench (C) to tighten the nuts on the traction set.

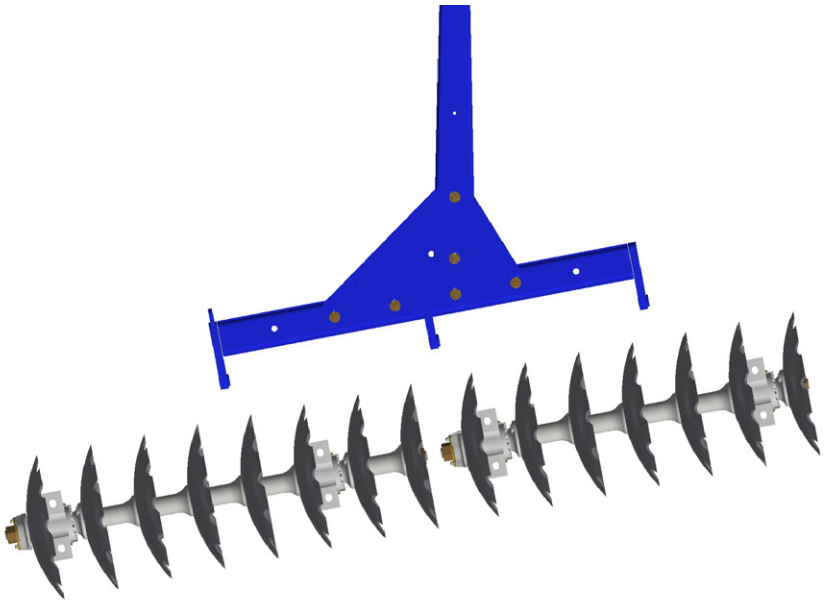


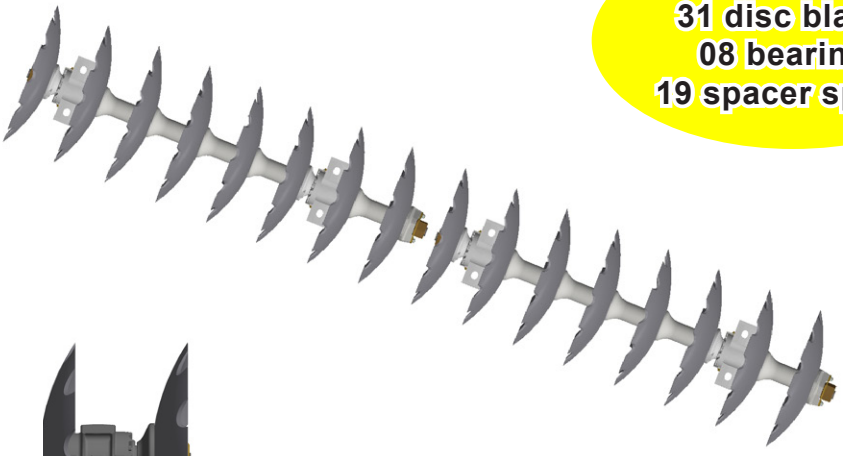
NOTE **We recommend wearing gloves, especially while assembling the disc gangs.**

Disc gangs assembly

Before starting to assemble the disc gangs, check the correct position of the bearings and spacer spools.

Assembly of bearings and spacer spools



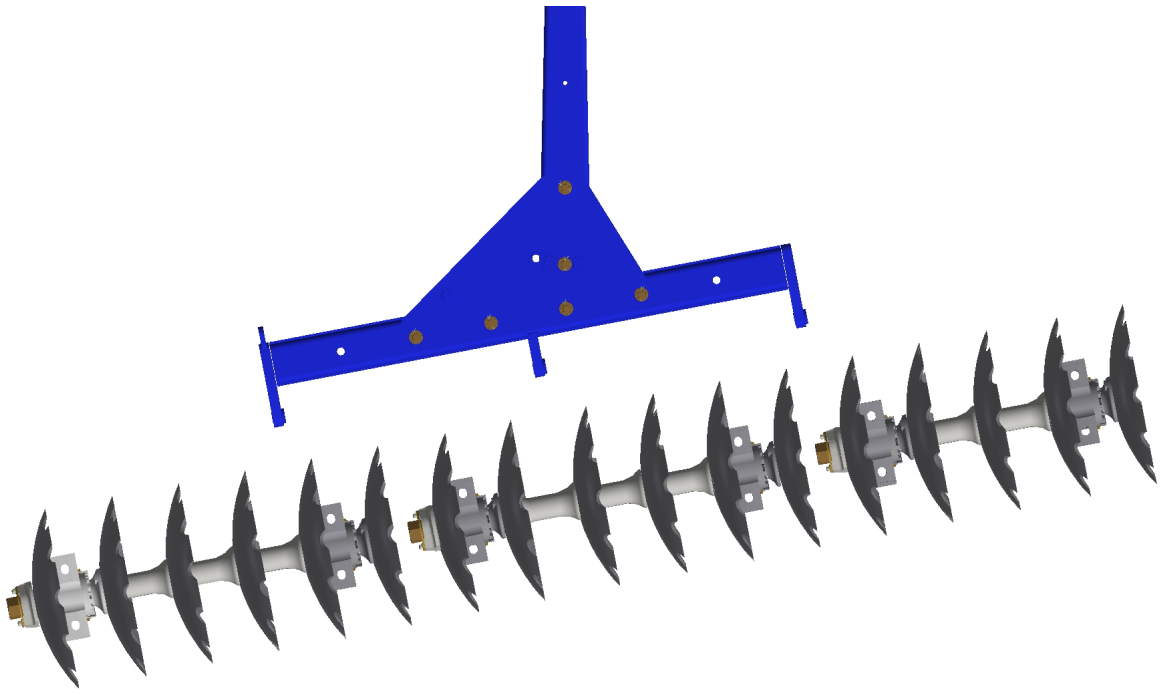


GAPCW
31 disc blades
08 bearings
19 spacer spools

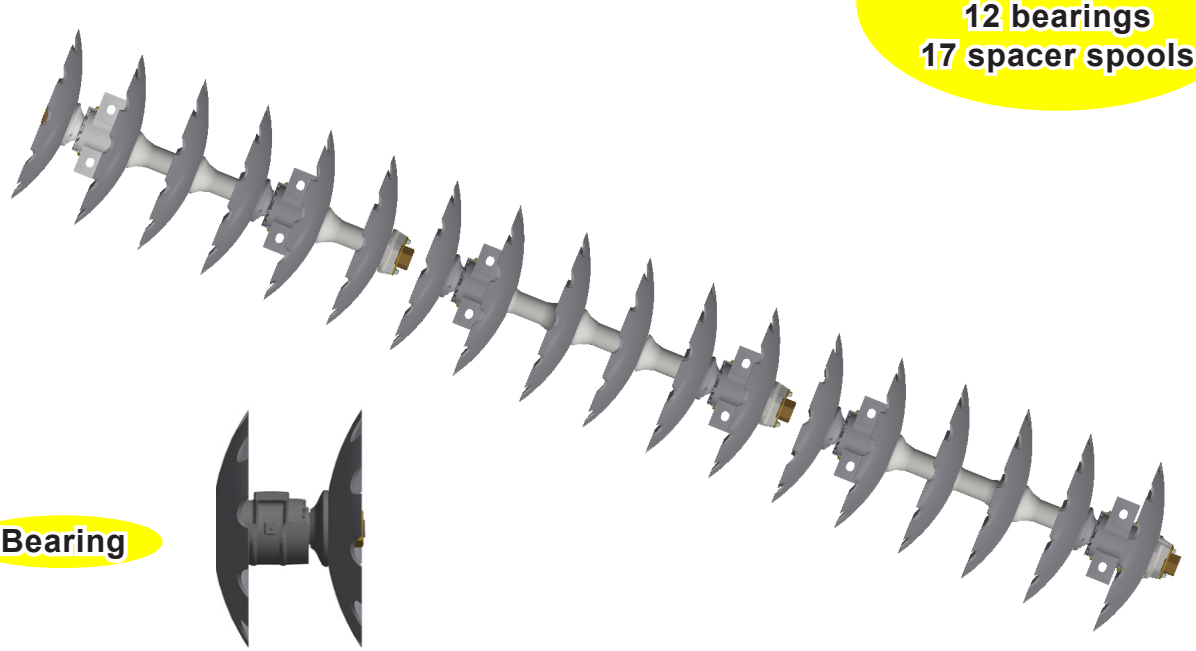
Bearing

Spacer spool

Assembly of bearings and spacer spools

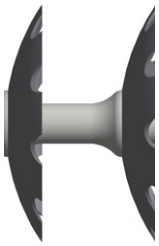


GAPCW
35 disc blades
12 bearings
17 spacer spools

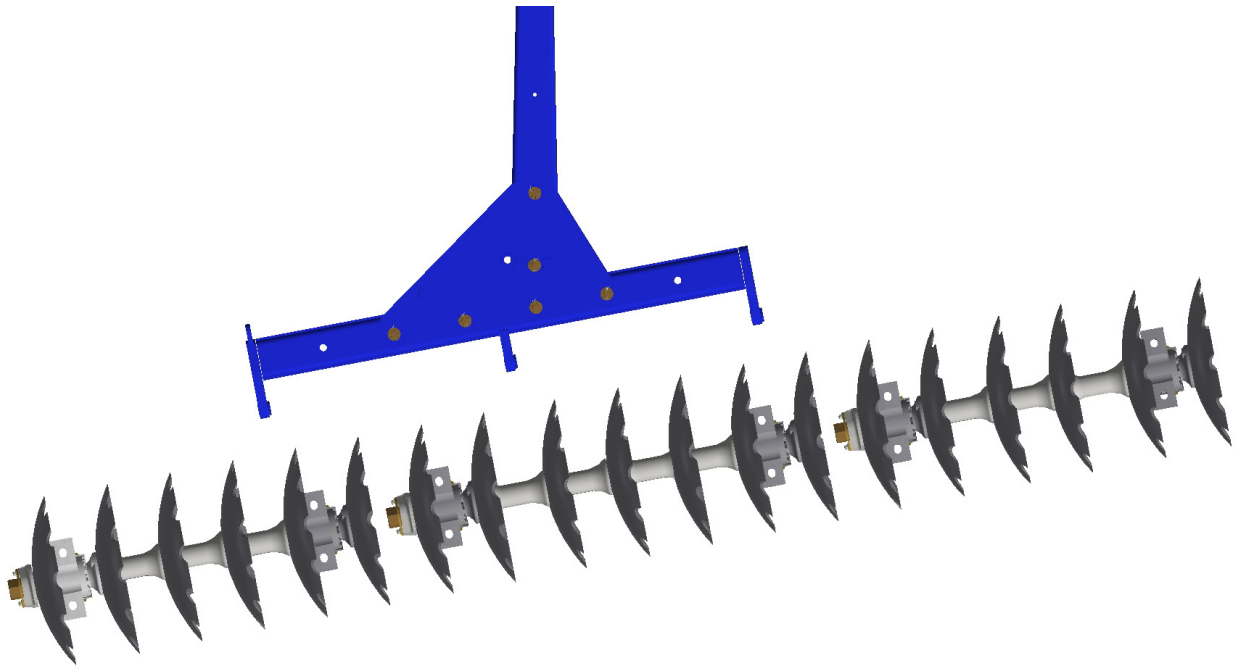


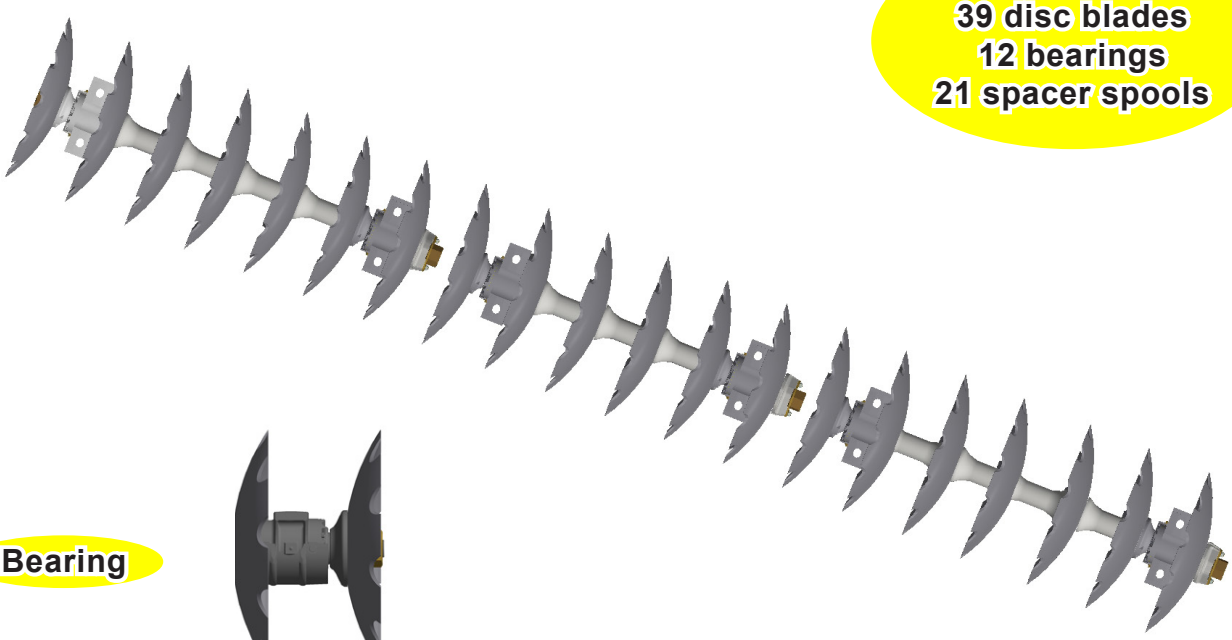
Bearing

Spacer spool



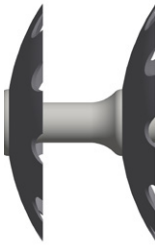
Assembly of bearings and spacer spools





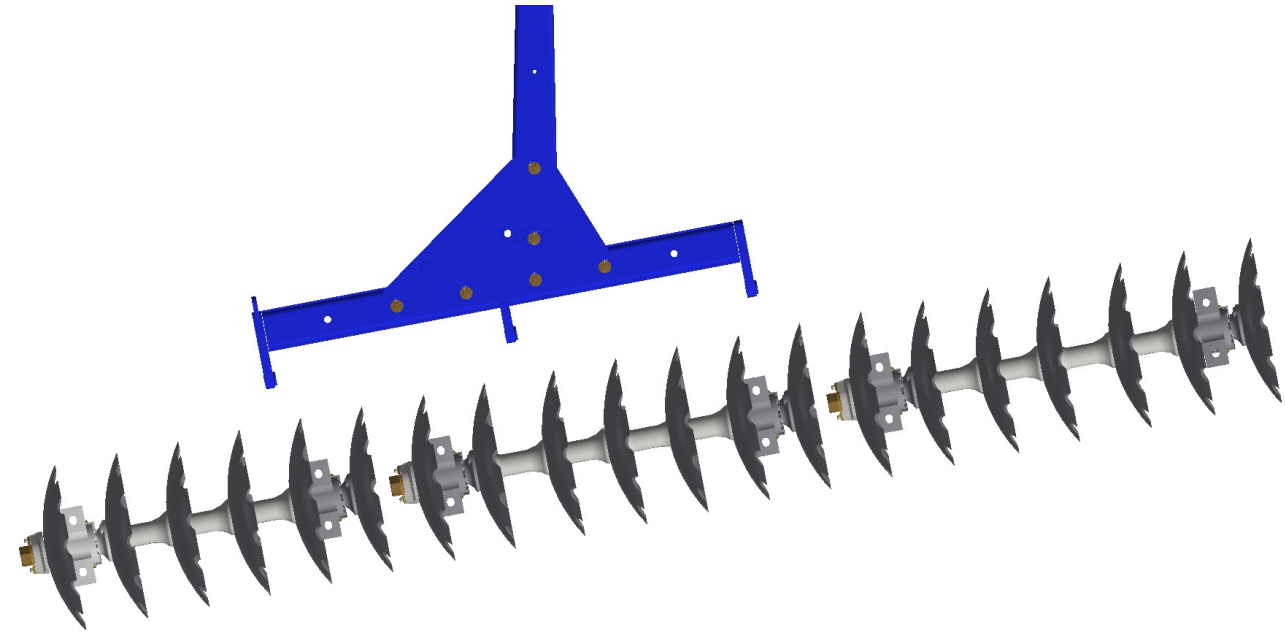
GAPCW
39 disc blades
12 bearings
21 spacer spools

Bearing

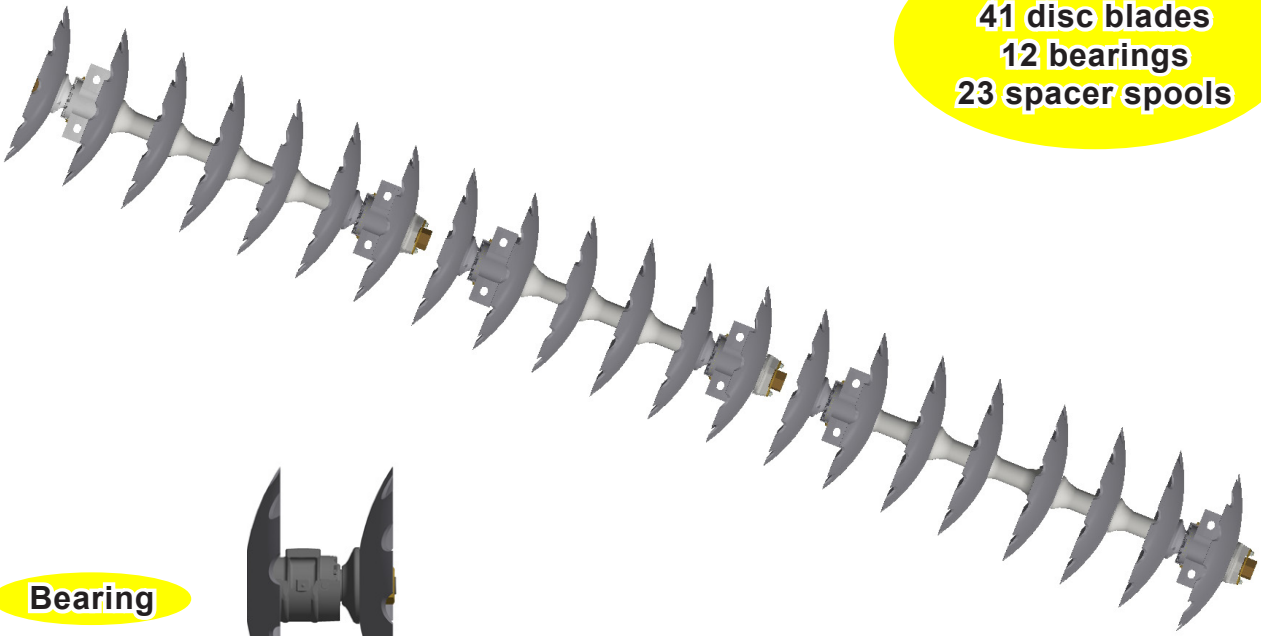


Spacer spool

Assembly of bearings and spacer spools

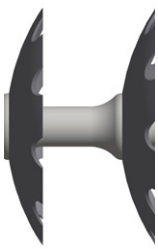


GAPCW
41 disc blades
12 bearings
23 spacer spools

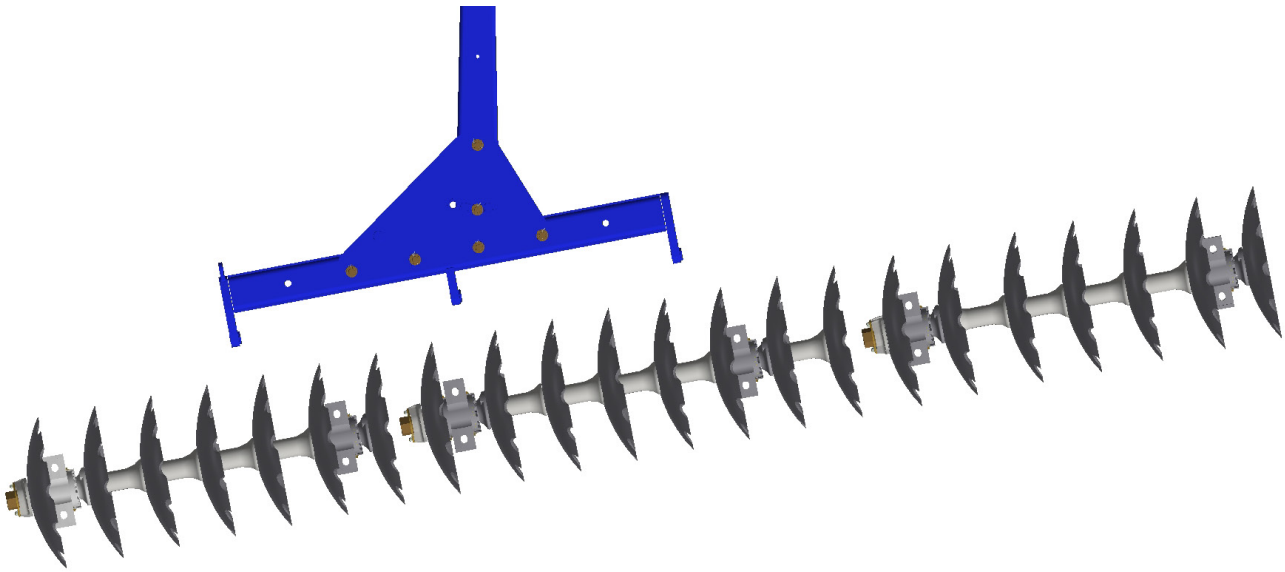


Bearing

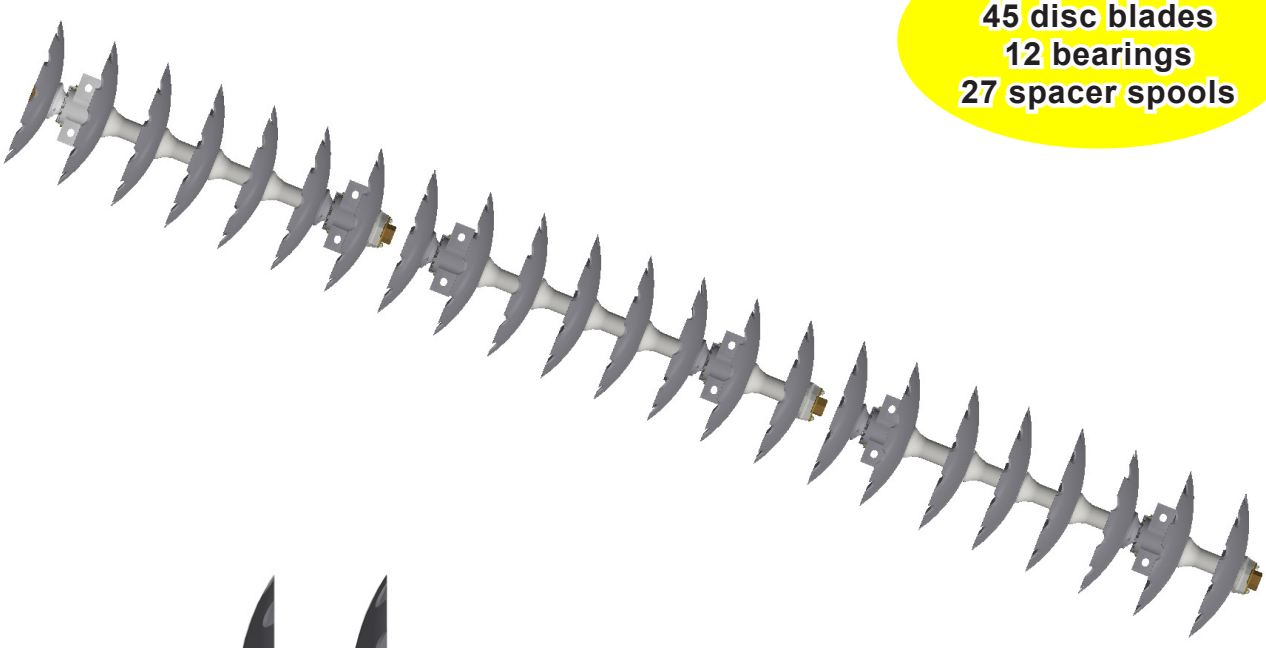
Spacer spool



Assembly of bearings and spacer spools



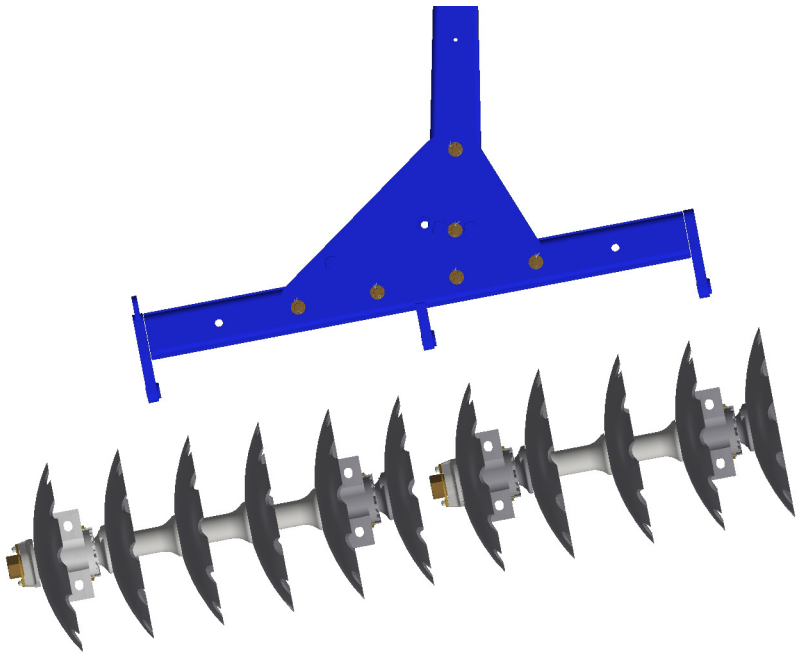
GAPCW
45 disc blades
12 bearings
27 spacer spools



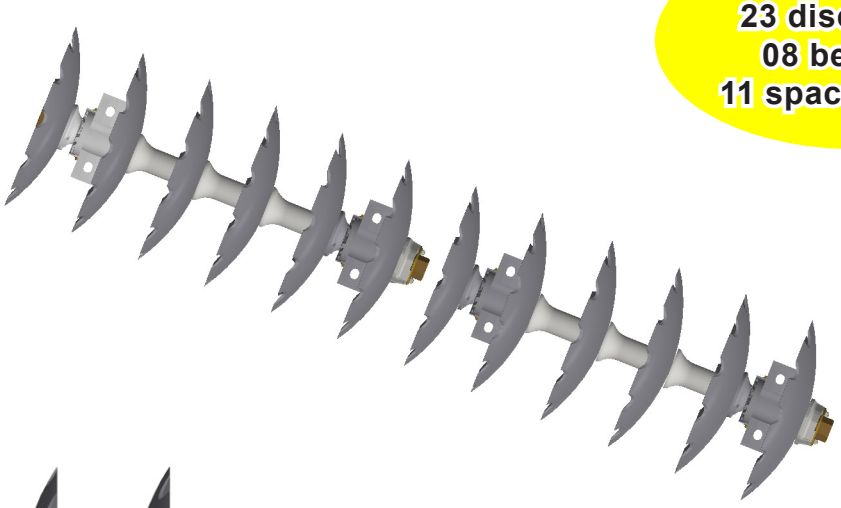
Bearing

Spacer spool

Assembly of bearings and spacer spools

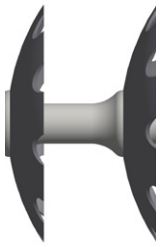


GASPCW
23 disc blades
08 bearings
11 spacer spools

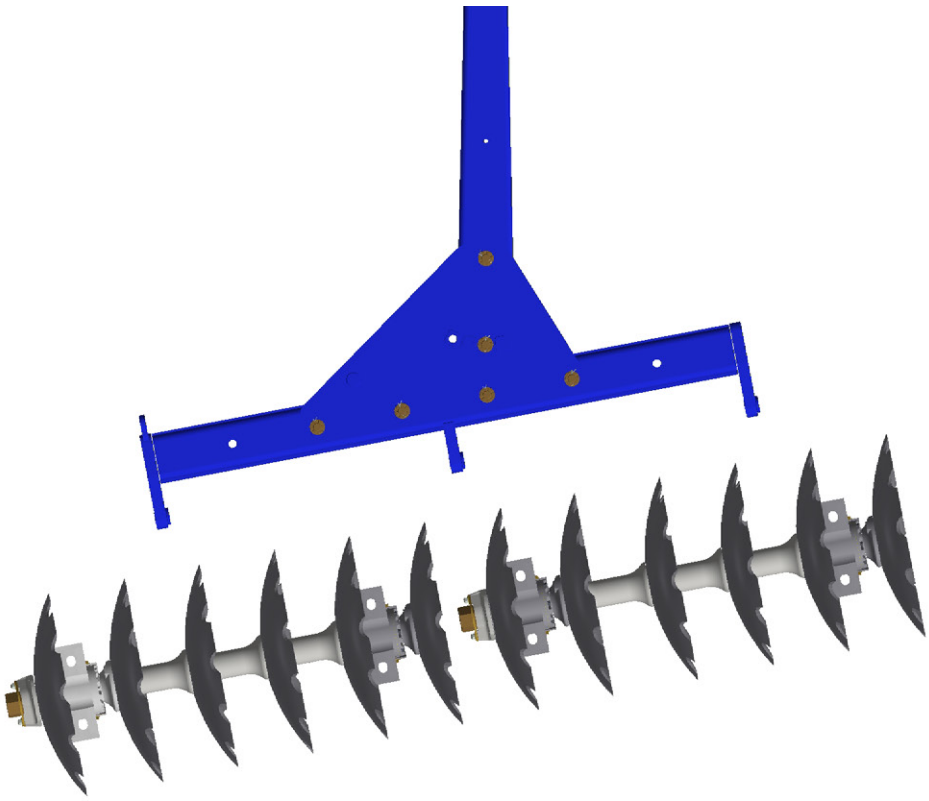


Bearing

Spacer spool



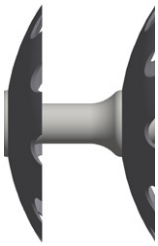
Assembly of bearings and spacer spools



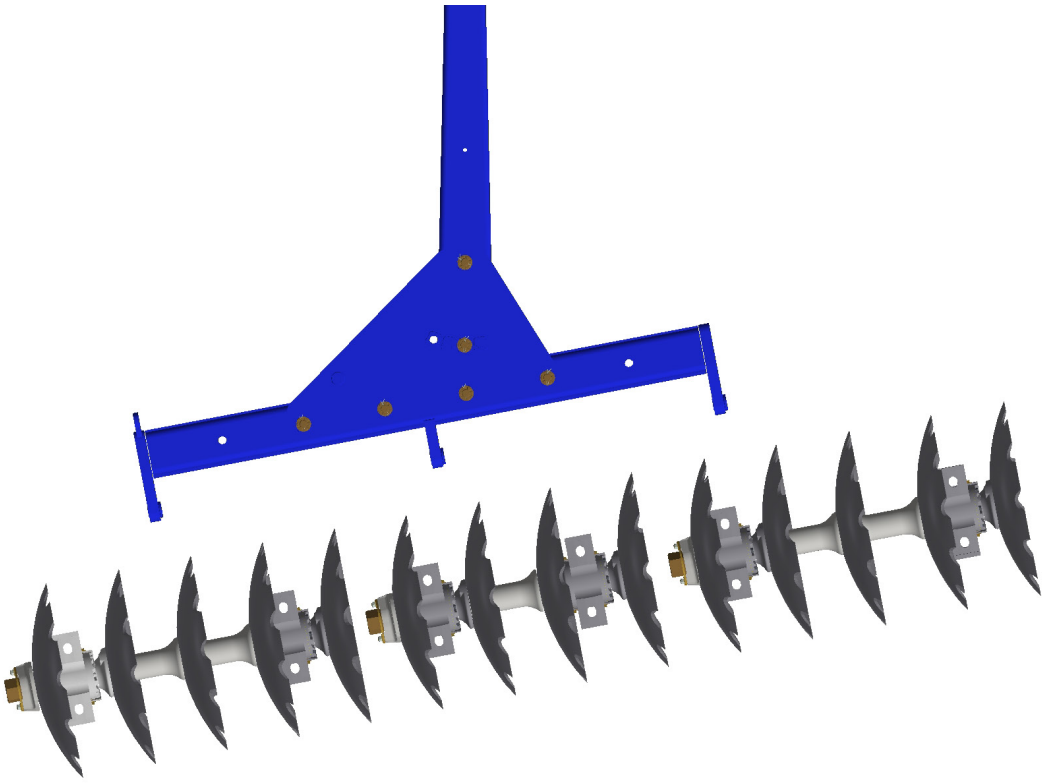
GASPCW
25 disc blades
08 bearings
13 spacer spools

Bearing

Spacer spool



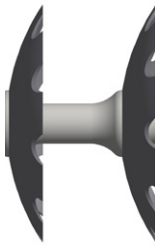
Assembly of bearings and spacer spools



GASPCW
29 disc blades
12 bearings
11 spacer spools

Bearing

Spacer spool



Disc gangs assembly sequence

Place the outer lock (A) along with the axle (B).

Place the nut (C) passing 5 mm from the axle face.

Place the disc blades (D), bearings (E) and spacer spools (F), following the instructions on pages 14 to 21.

Place the inner lock (G) and the other nut (C-1).

Place the bolt (H) that fasten the nut lock (I), along with a spring washer and nut. (only on the outer side of the gangs).

Use the wrenches from page 13 to tighten the gangs, as follows:

1) Place one of the wrenches on the outer side of the gangs (locked side), supporting it on the ground. (Figure on page 23).

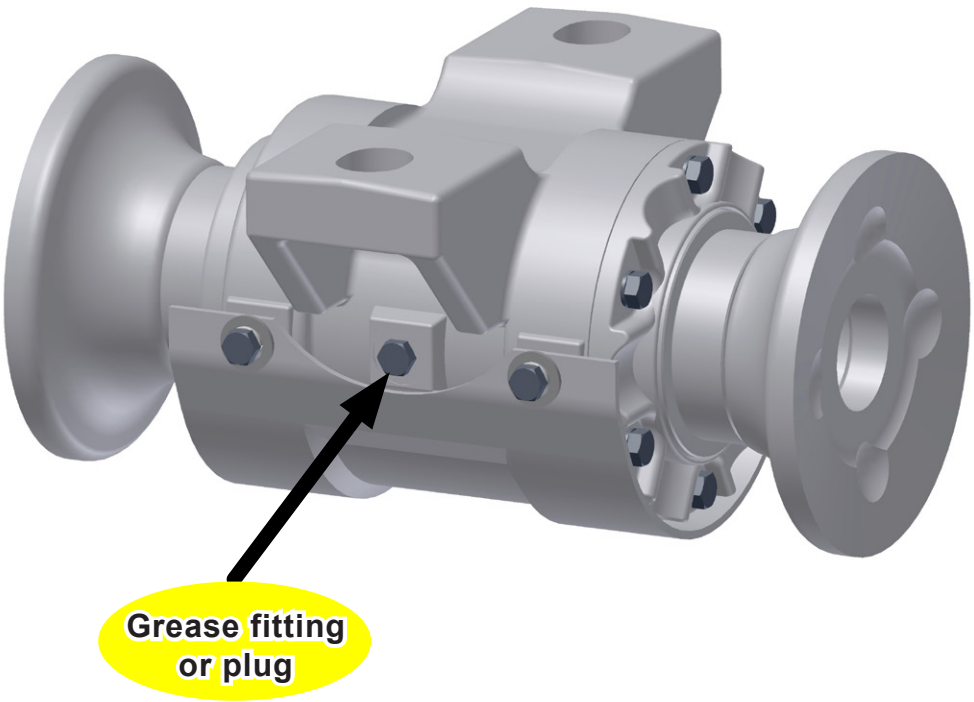
2) On the inner side, use the other wrench and tighten the gangs to get maximum torque.

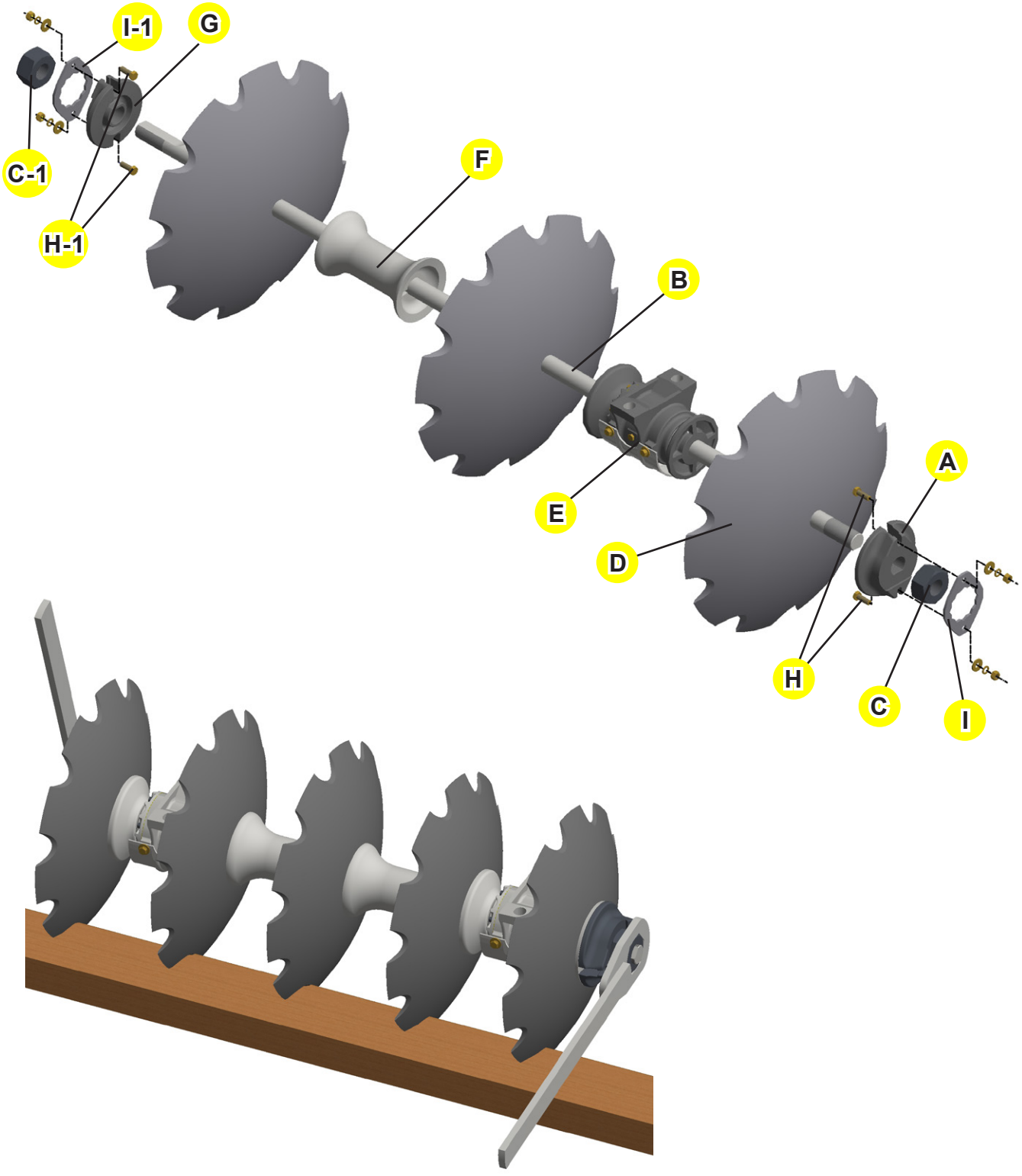
3) To tighten, the gangs must remain underpinned with a piece of wood or another object, preventing them from moving. (Figure on page 23).

Lastly, place the bolt (H-1) and position the lock nut (I-1), fastening with a spring washer and nut.

IMPORTANT

- **Check the correct side of the bearings and spacer spools according to the concavity of the disc blades.**



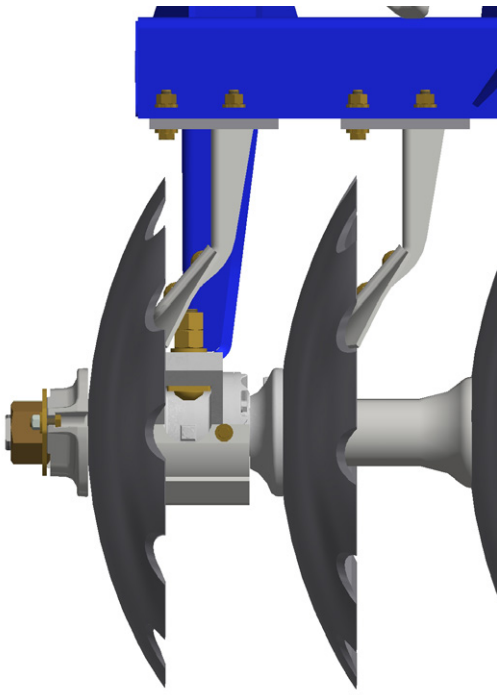


Axle torque	
Axle diameter	**Ft. - lbs.**
1.1/2"	2670
1.5/8"	2890
2.1/8"	3300
2.1/2"	3500

NOTE **Consult torque table on page 50.**

Assembly of the disc gangs on the frame

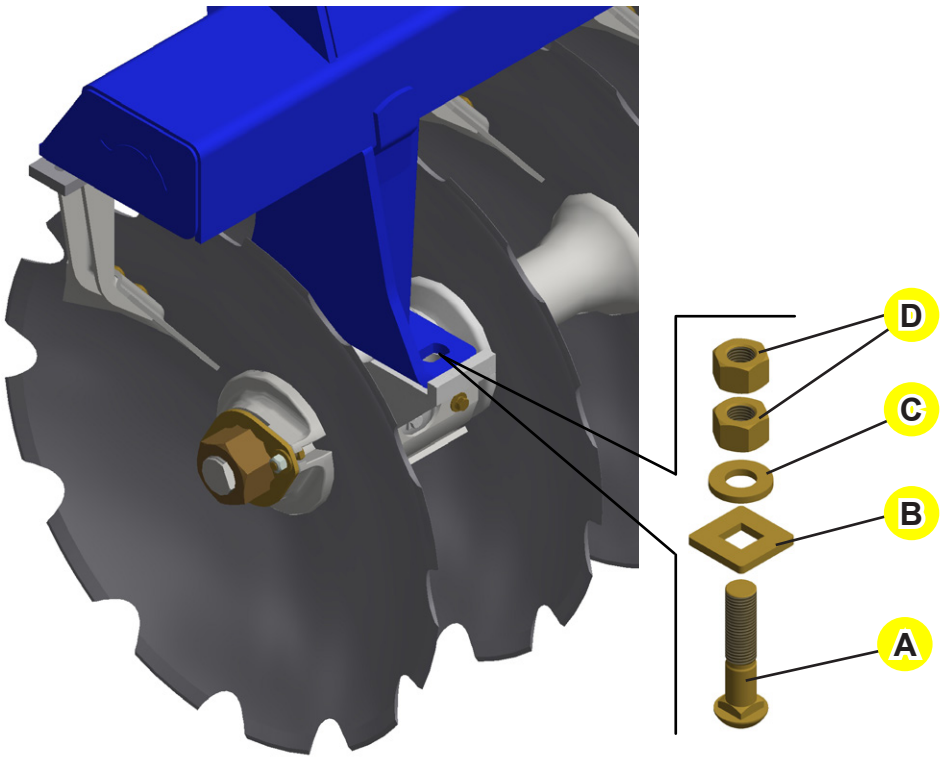
IMPORTANT **The rear gang turns earth to the left and the front gang turns earth to the right.**



In the gang assembly to the carriers, the bearing hangers should remain facing the disc blades concavity.

Place a bolt (A) with square washer (B) and pass it through the bearing and the bearing hanger hole. On top, place a flat washer (C) and nuts (D).

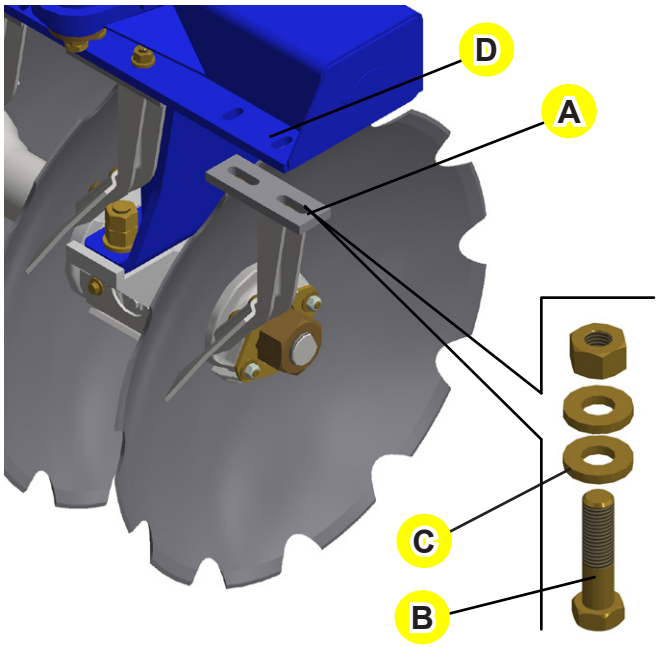
Repeat this operation for other bearings.



Scrapers assembly

Note the fixing point of the scrapers with the end facing the concave side of the disc blades.

Assemble the scrapers (A) using a bolt (B) and flat washer (C), which is placed underneath the fixation plate (D). On top, place a flat washer and nut.



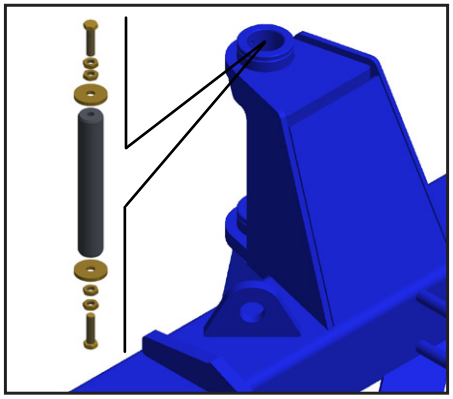
NOTE

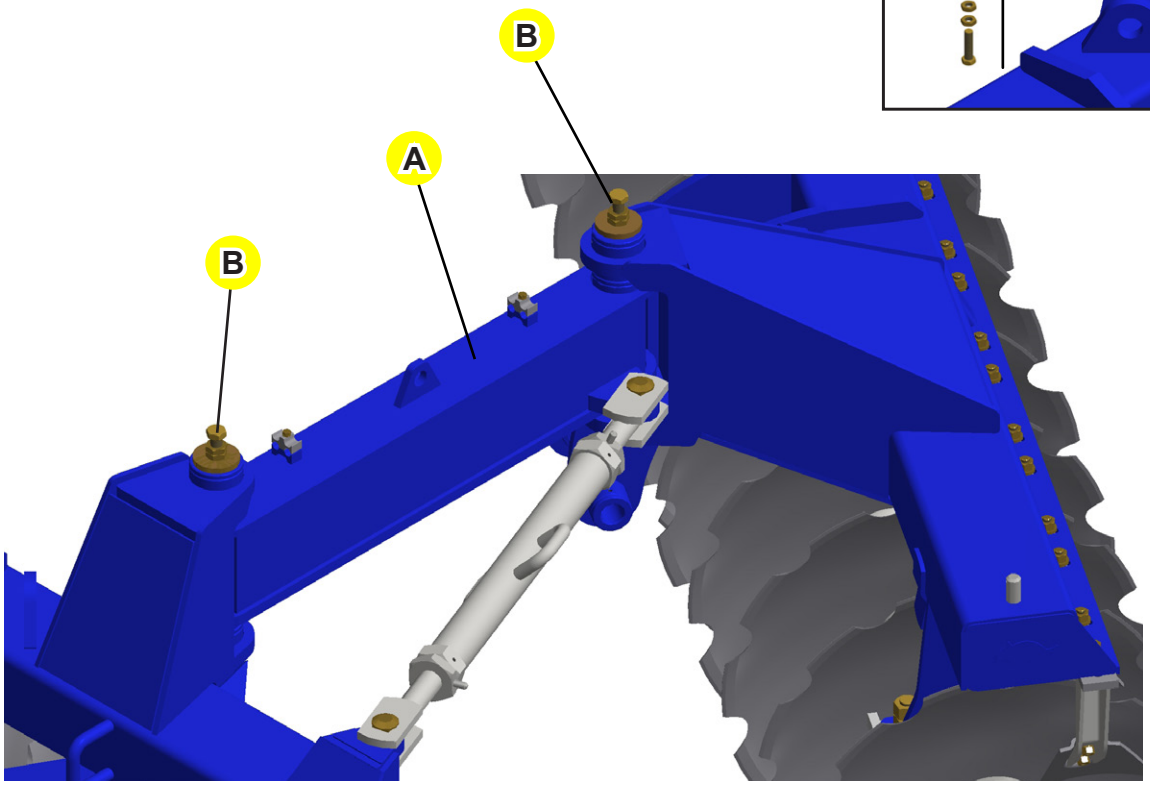
The scrapers feature an adjustment to approach or distance them from the disc blades, on a range from 10 to 20 mm.

Frame junction assembly

Approach the frames with disc gangs and assemble the junction (A) with the axles (B), flat washers, spring washers and bolts.

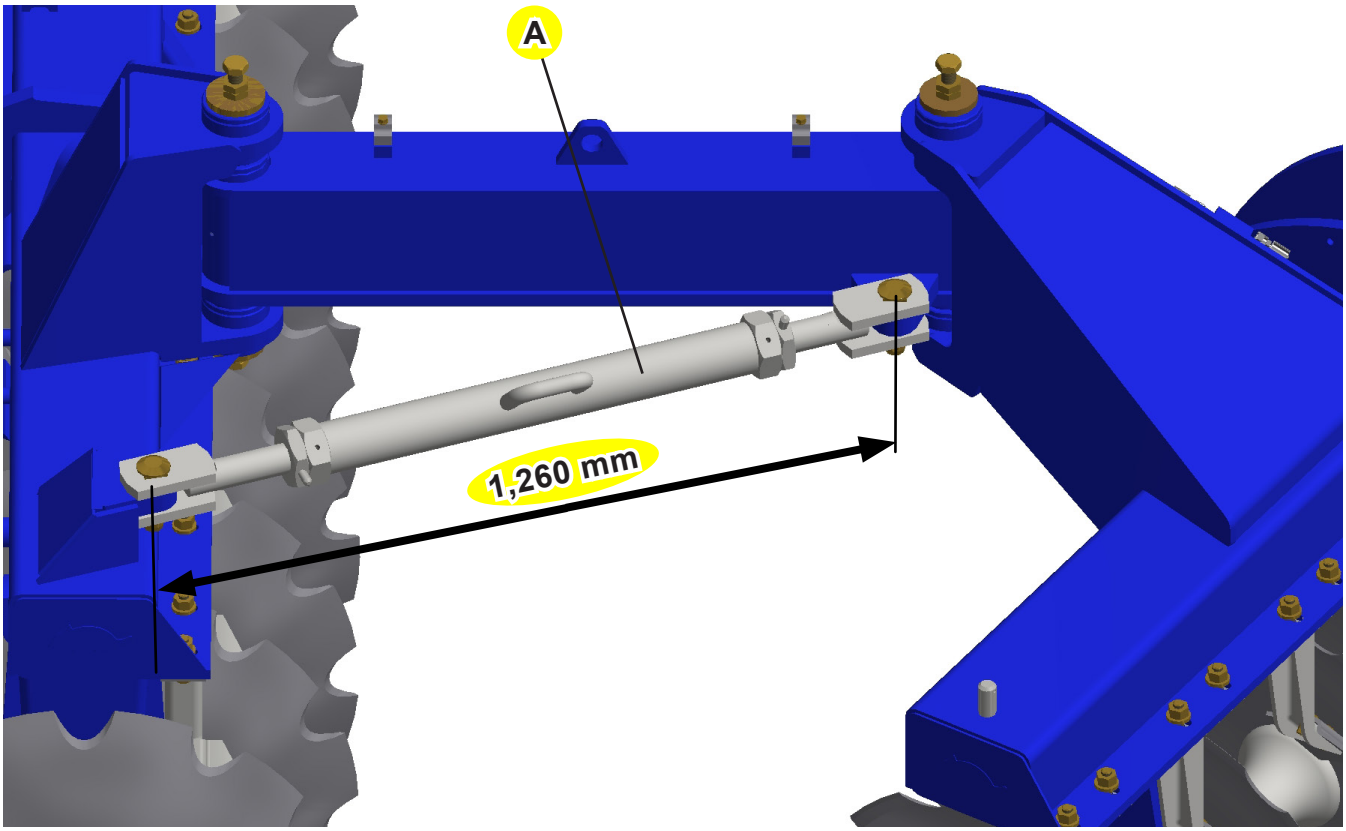
After joining the frames, totally tighten the nuts of the bearing bolts, which fasten the disc gangs.





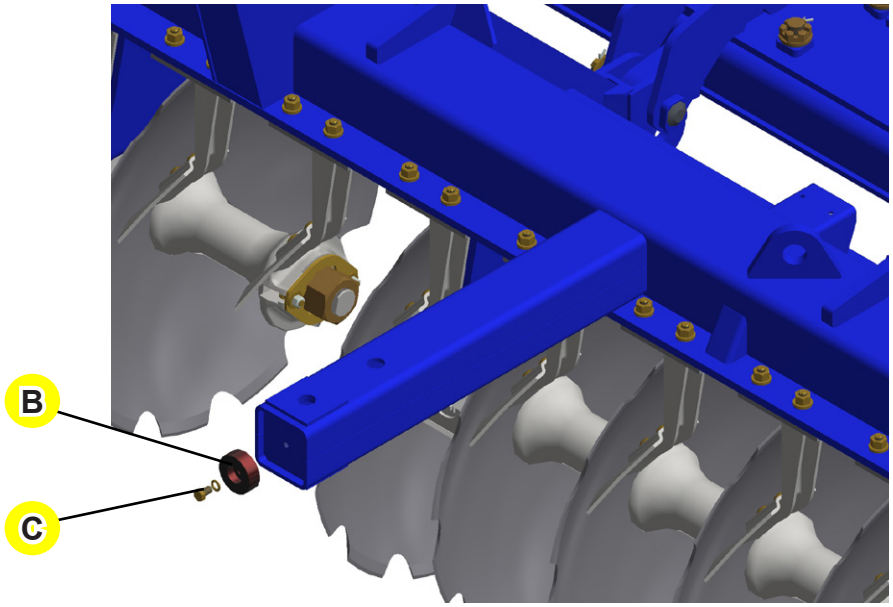
Junction extension assembly

Install the junction extension (A), divide the thread center to center and determine a length of **1,260 mm** (126 cm) from the center of the fixation pins.



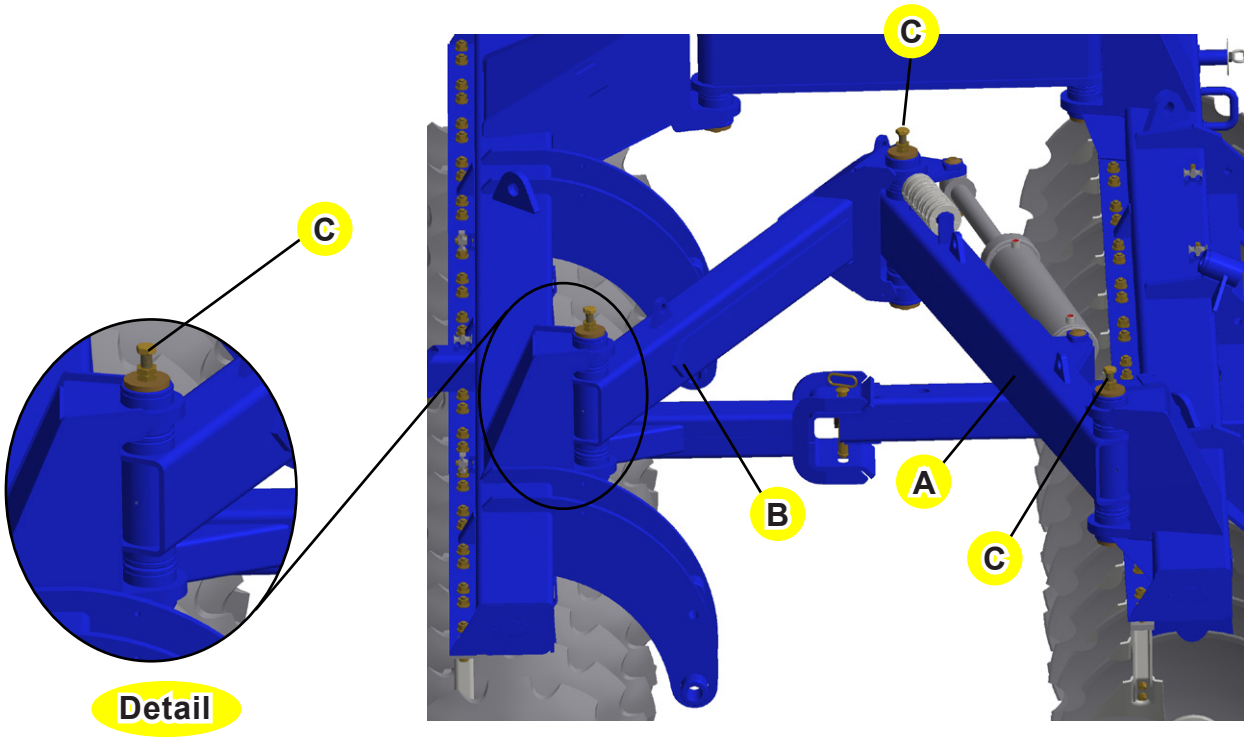
Shock absorber assembly

Install the shock absorber (B) to the front frame using a bolt (C) and spring washer.



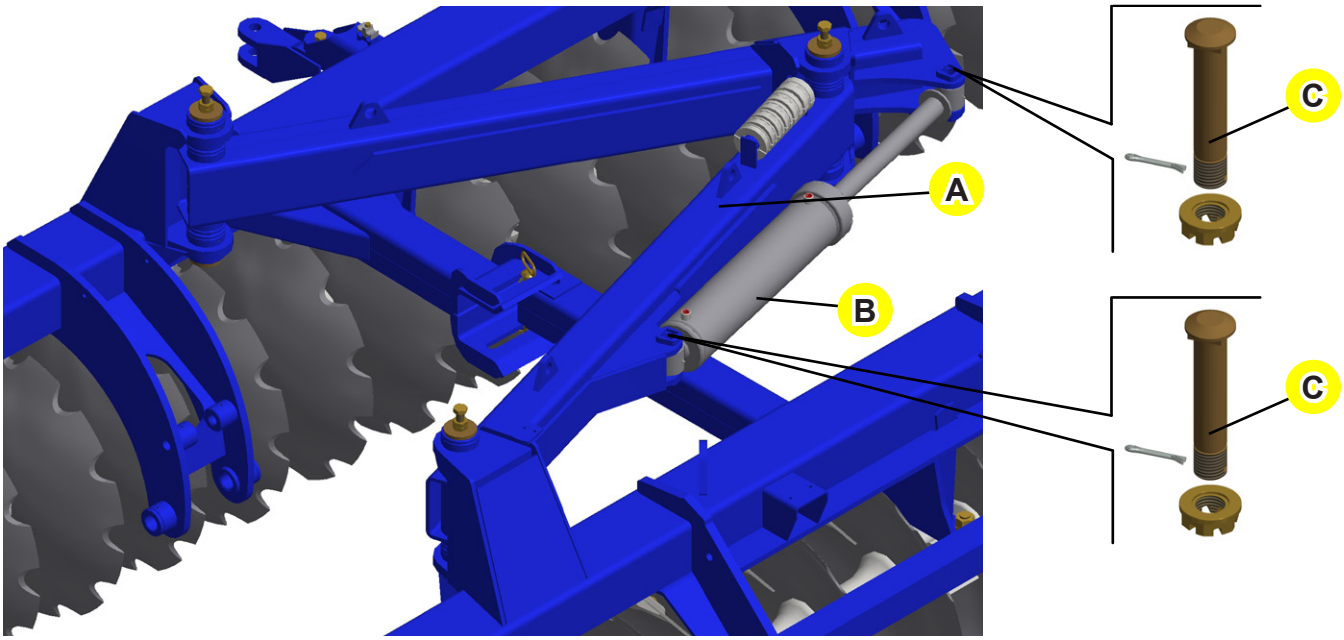
Front and rear stabilizer bars assembly

Install the front (A) and rear (B) stabilizer bars using axles (C), flat washers, spring washers and bolts.



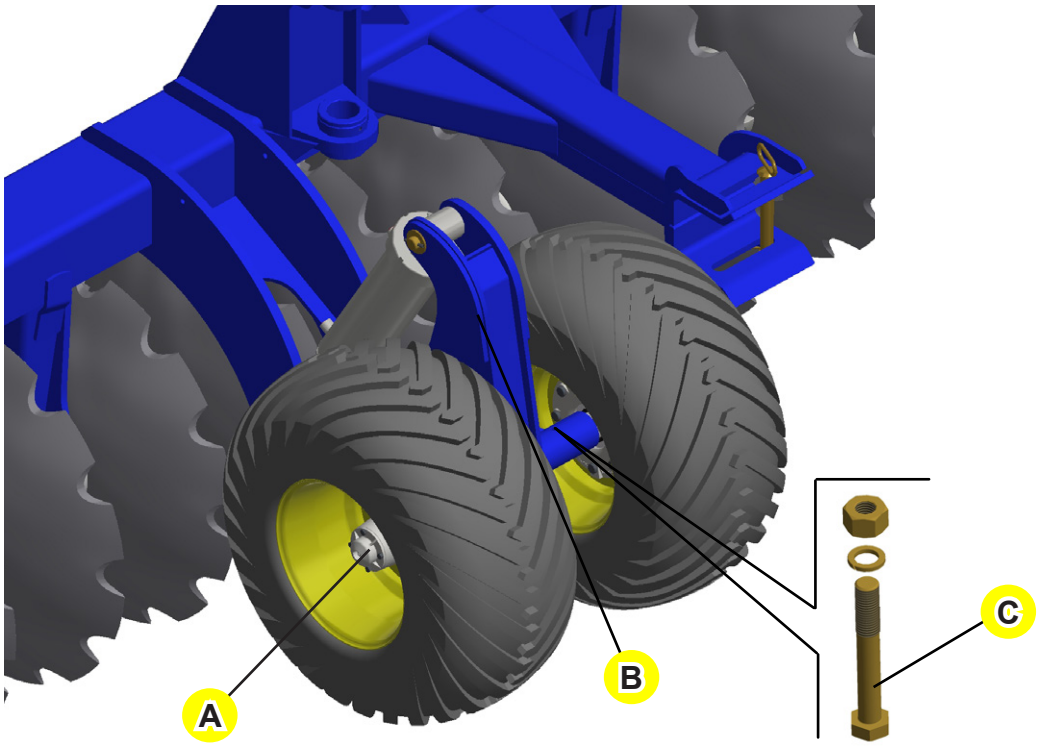
Stabilizer bars cylinder assembly

In the front stabilizer (A), install the hydraulic cylinder (B) and fasten using a junction axle (C), castle nut and cotter pin.



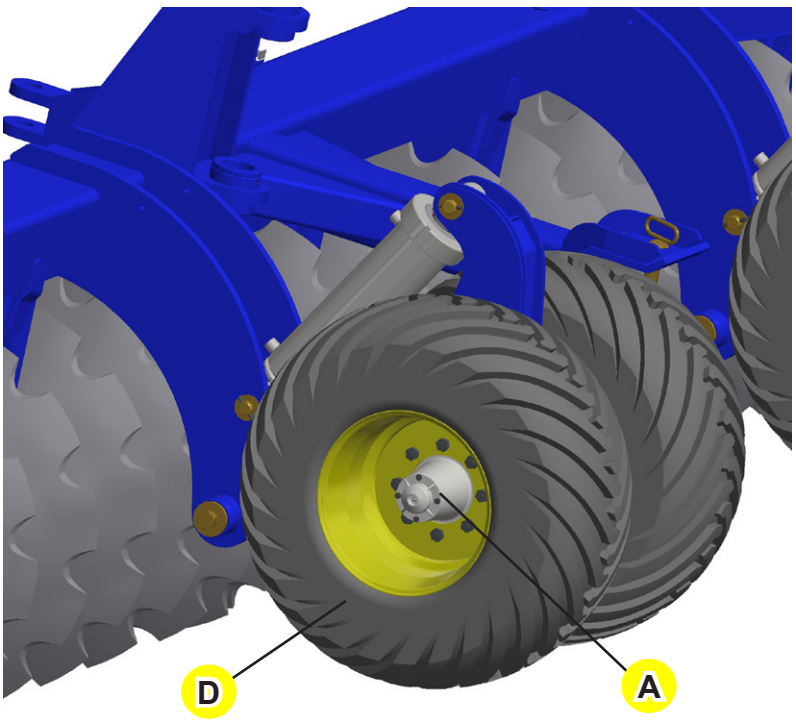
Assembling the hubs to the wheelset arms

Install the hubs (A) to the wheelset arms (B) using a bolt (C), spring washer and nut.



Tires assembly

Install the tires (D) on the hubs (A), using the nuts fixed on the hubs.

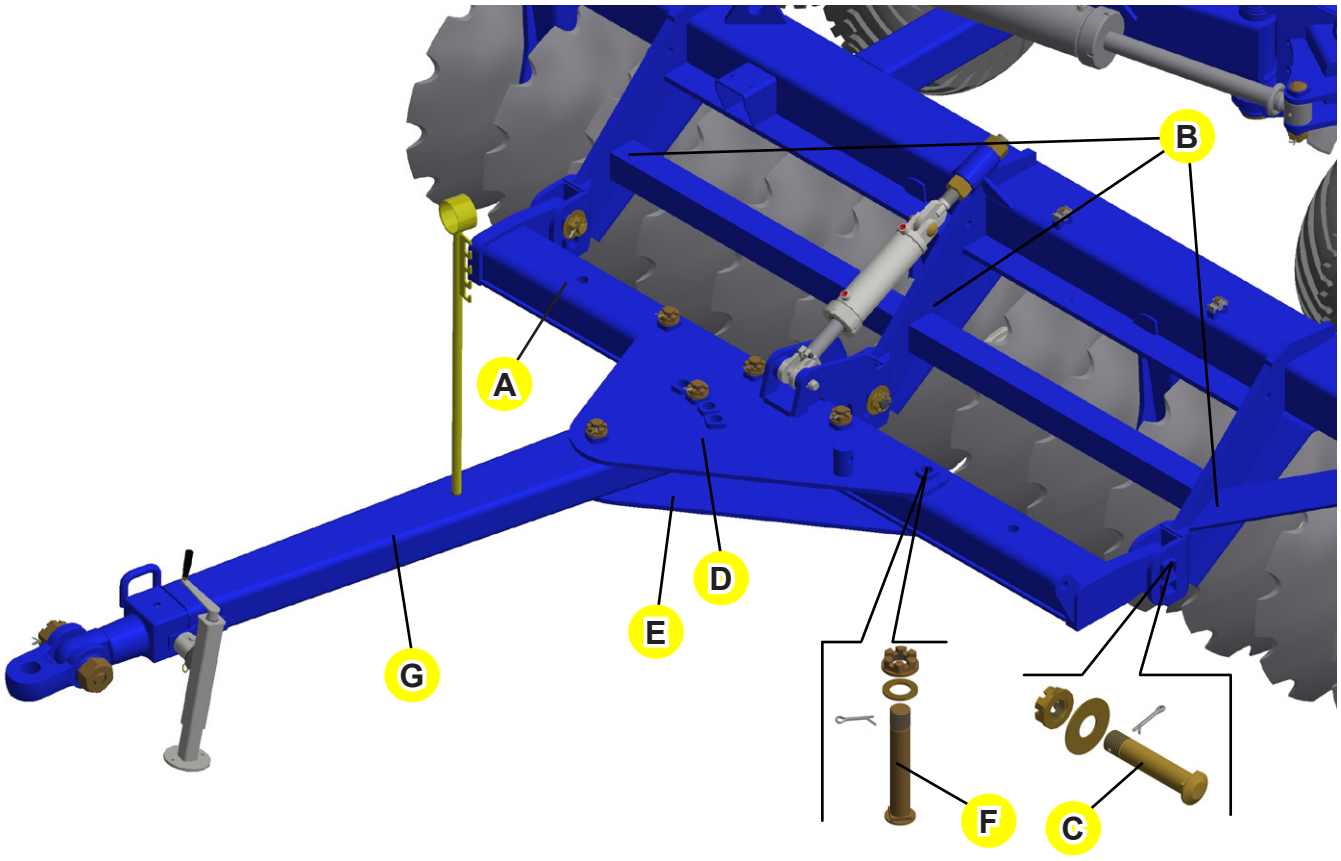


Traction set assembly

Couple the hitch bar (A) to the frame arms (B) using a junction axle (C), flat washer, castle nut and cotter pin.

Assemble the upper (D) and lower (E) plates, carefully observing their correct position. Avoid to put them inverted and lock them using a junction axle (F), flat washer, castle nut and cotter pin.

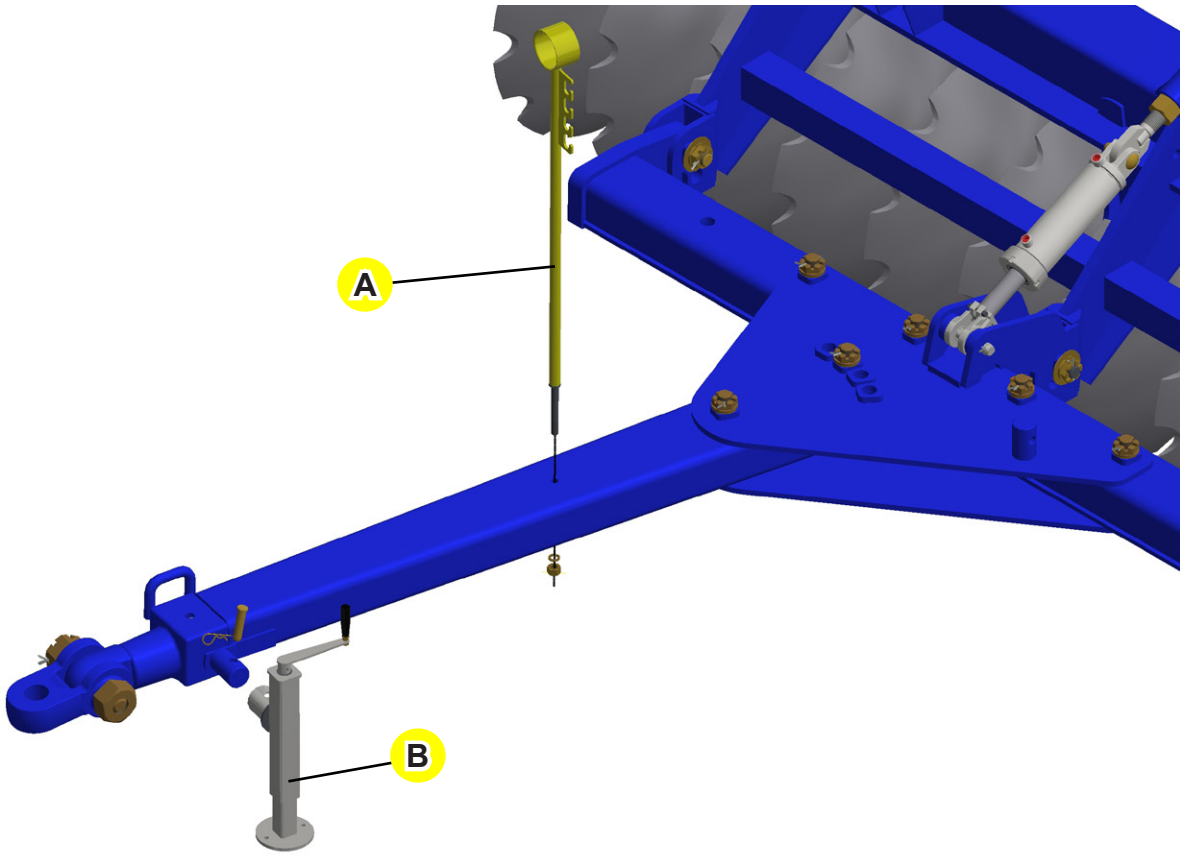
Assemble the drawbar (G) and fasten it using a junction axle (F), flat washer, castle nut and cotter pin.



NOTE **All castle nuts are situated on the upper part of the plate and locked with cotter pins.**

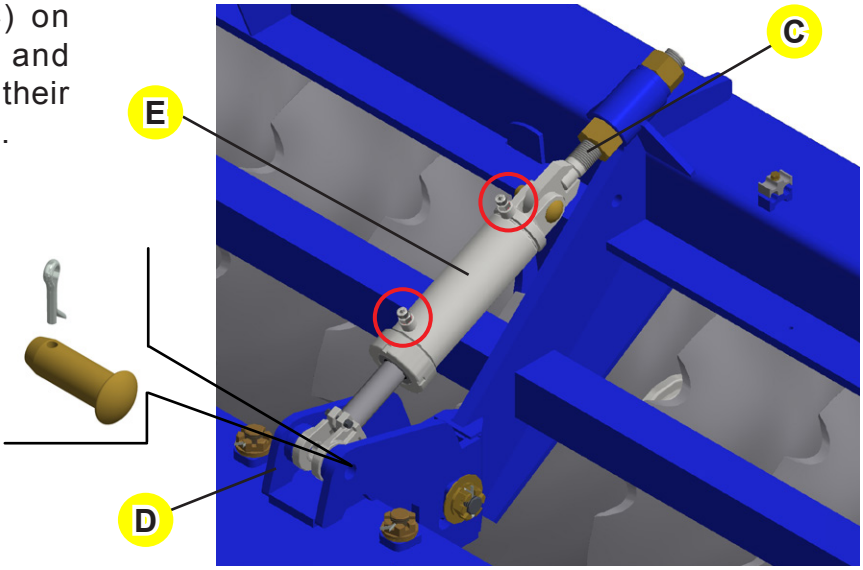
Hose support and jack assembly

Install the hose support (A) using a spring washer and nut.
Assemble the jack (B) using a junction axle and cotter pin.



Drawbar articulation set assembly

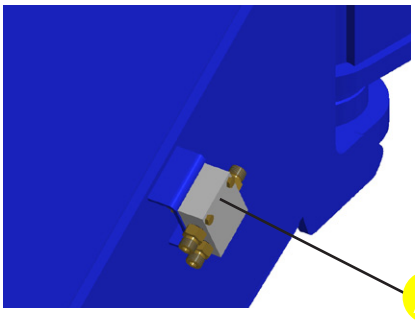
Assemble the spindle (C) on the frame, the articulator (D) and the hydraulic cylinder (E) using their respective axles and cotter pins.



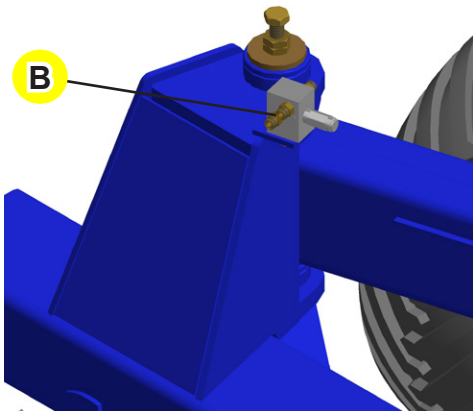
NOTE **The hydraulic cylinder nipples (E) and drawbar articulation nipple are reduction nipples.**

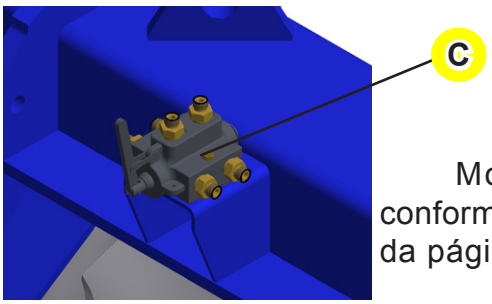
Hydraulic circuit valves assembly

Fasten the flow divider valve (A) to the rear frame with bolts, spring washers and nuts.



Install the pressure adjuster valve (B) to the front frame using bolts, spring washers and nuts.





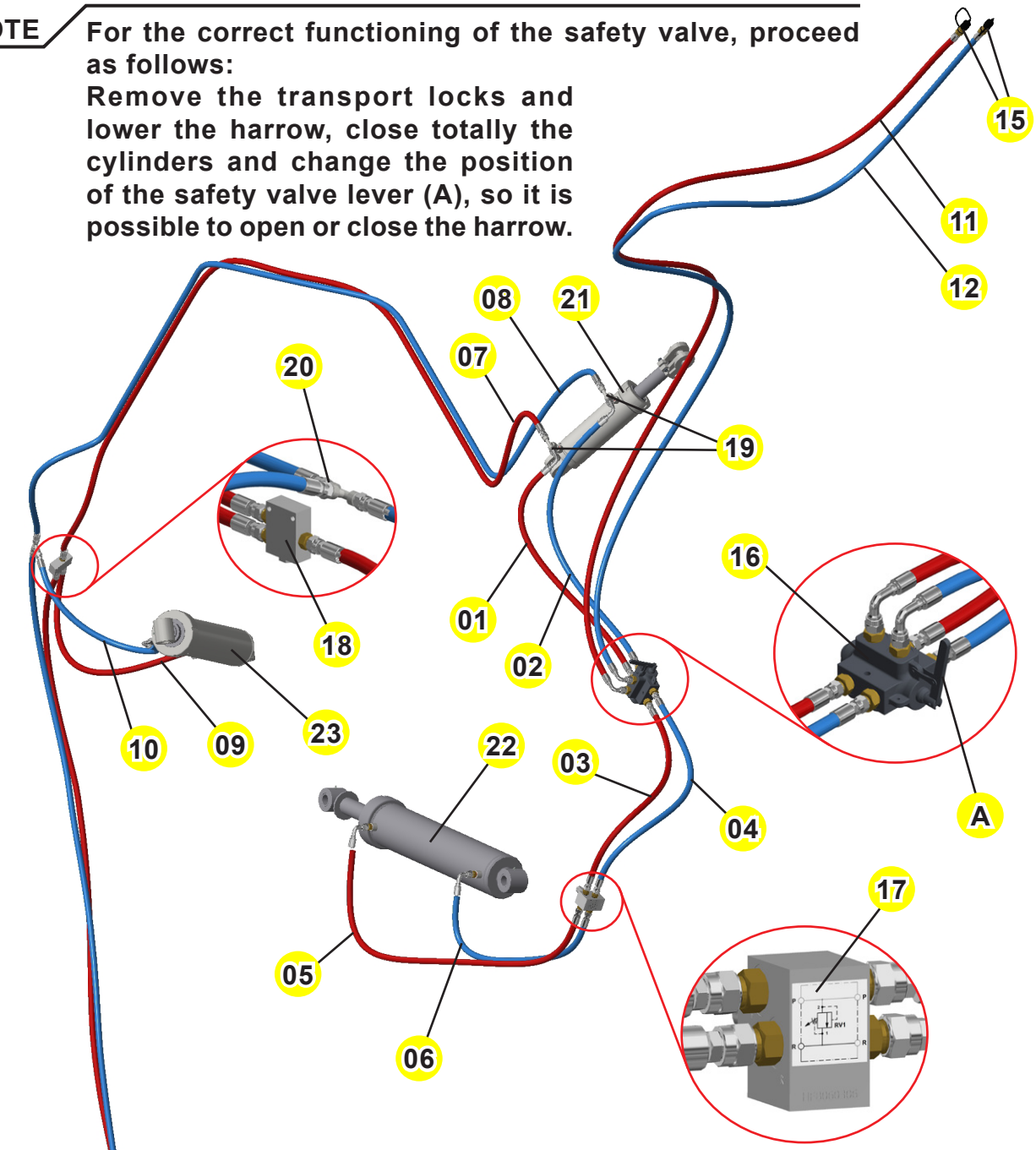
Monte a válvula de segurança (C) conforme figura e instrução de funcionamento da página seguinte.

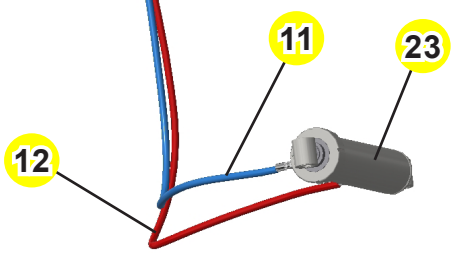
Hydraulic circuit components

Number	Description	Qty.	
01	1/2" x 850 TR-TC hose	Pressure	01
02	1/2" x 1000 TR-TC hose	Return	01
03	1/2" x 1300 TR-TR hose	Pressure	01
04	1/2" x 1300 TR-TR hose	Return	01
05	1/2" x 1950 TR-TC hose	Pressure	01
06	1/2" x 1200 TR-TC hose	Return	01
07	1/2" x 4000 TR-TR hose	Pressure	01
08	1/2" x 4700 TR-TR hose	Return	01
09	1/2" x 1500 TR-TR hose	Pressure	01
10	1/2" x 1400 TR-TC hose	Return	01
11	1/2" x 5000 TR-TR hose	Pressure	01
12	1/2" x 5200 TR-TR hose	Return	01
13	1/2" x 4800 TC-TM hose	Pressure	01
14	1/2" x 4800 TC-TM hose	Return	01
15	Male quick coupler AGR 1/2 NPT w/ cap	02	
16	Complete safety valve	01	
17	Relief valve with nipple	01	
18	Flow divider valve 50-50	01	
19	T male adapter 1/2 OFS swivel nut	02	
20	T male adapter T 1/2 OFS	01	
21	Hydraulic cylinder 44.45 x 76.2 x 515 x 203	01	
22	Hydraulic cylinder 63.5 x 150 x 965 x 625	01	
23	Hydraulic cylinder 50.8 x 127 x 654 x 346	02	

Hydraulic circuit assembly

NOTE For the correct functioning of the safety valve, proceed as follows:
Remove the transport locks and lower the harrow, close totally the cylinders and change the position of the safety valve lever (A), so it is possible to open or close the harrow.





NOTE Observe that there are the letters "P" and "R" on the pressure adjusting valves, as shown in the figure. These hoses must never be inverted connected.
The hoses to be connected to the "P" port are responsible to close the hydraulic cylinder (rod side).
This valve function is to control the closing pressure of the hydraulic cylinder, in a way that the rop stops will not be crushed.

Set-up instructions

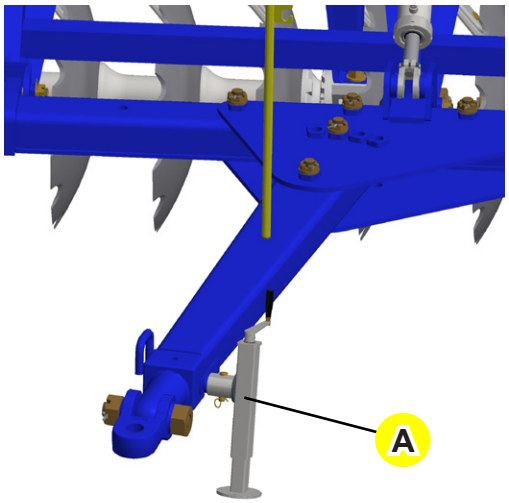
The following instructions should be carefully observed in order to maintain the best performance at work.

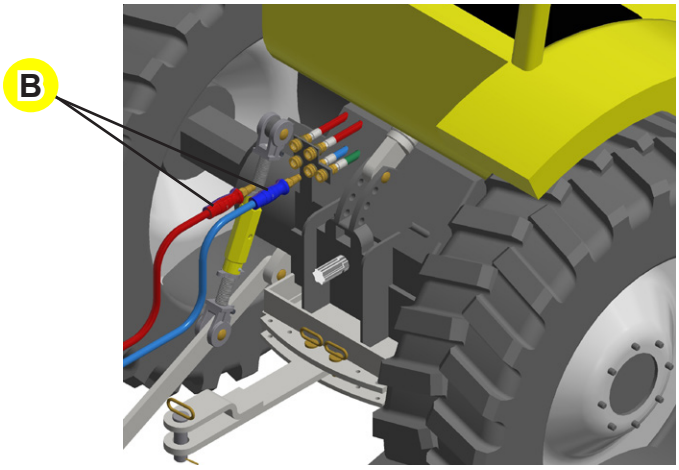
Preparing the tractor

The addition of water ballasts in the tires and extra counterweights in the front or at rear tractor wheels, are the most useful ways to increase the traction in the soil and get larger stability to the tractor.

Hitching to the tractor

Couple the drawbar to the traction bar using the proper locking. To facilitate hitching, use the jack (A) adjustment (A). Couple the hoses (B) to the outlet terminals, checking if the quick couplers are clean.

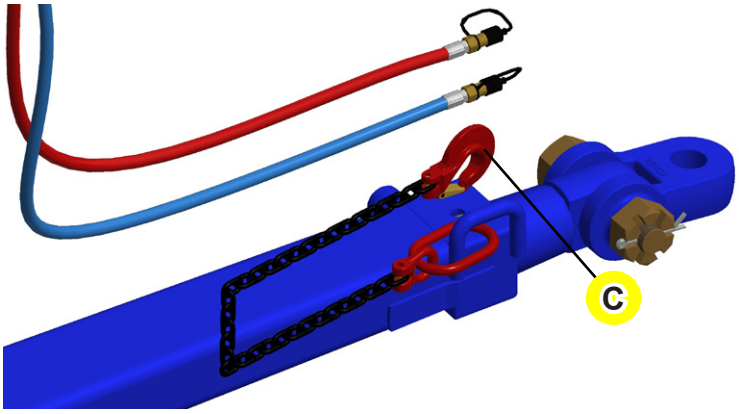




NOTE **The tractor hitch pin is not included with the equipment.**

Safety chain

Always use the safety chain (C), which must be fixed to the tractor and to the harrow.



ATTENTION

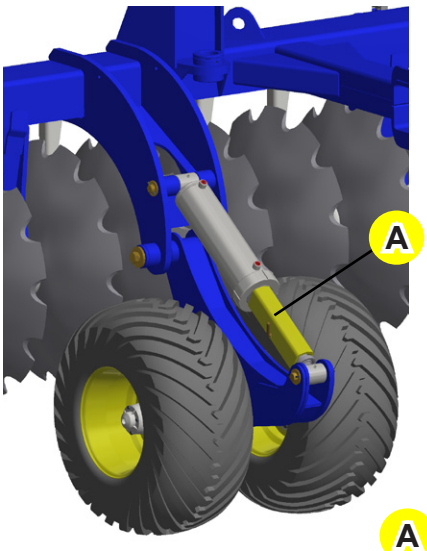
- **Before activating the hydraulic command to lower or lift the tires, check if there are no people close to the harrow, especially near the drawbar.**
- **Do not allow that people or animals get closer to the equipment.**
- **Never relieve or remove the hoses without relieving the control valve pressure.**

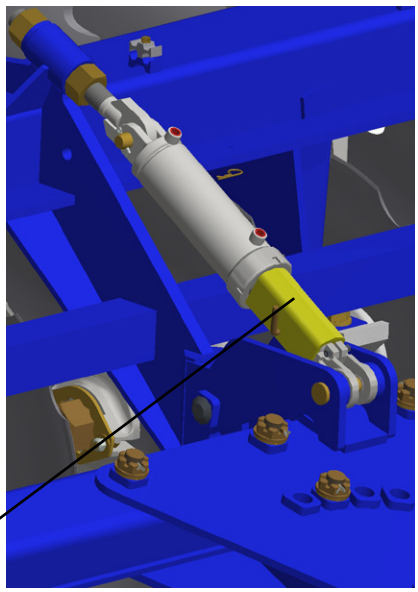
Important recommendations

• The tractor drawbar must remain loose during working and fixed during transportation.

• Never remove the hoses without lowering the harrow until the disc gangs touch the soil and relieve the control valve pressure.

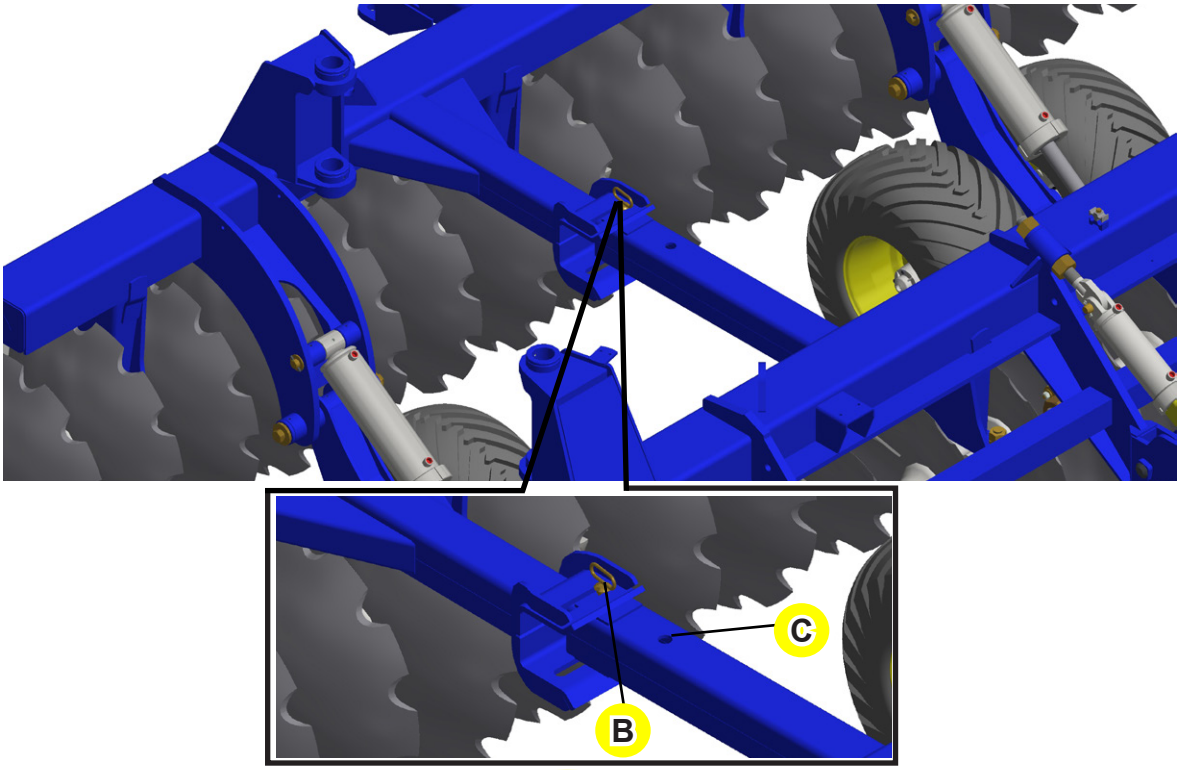
• To transport the harrow to greater distances, use the transport locks (A), which are coupled to the hydraulic cylinder rods.





• Before starting working, check the conditions of all parts and retighten nuts and bolts, especially the ones from the disc gangs; damage to the axles and fixation parts may occur when the gangs work loose.

• Never forget to remove the pin (B) to unlock the frame when working with the harrow, and place the pin on the hole (C).

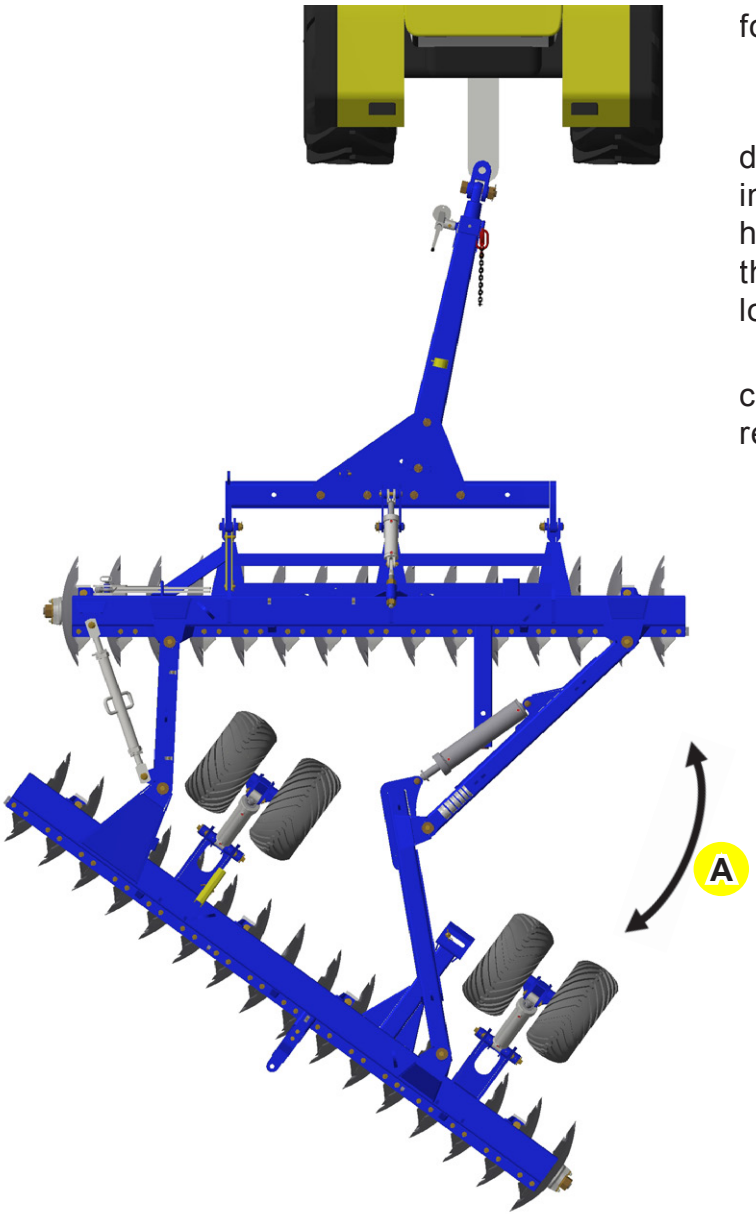


Detail

NOTE **Being the harrow opened, never lower the wheelset set for transportation, as it will damage all the wheelset system.**

These harrows have an "OFFSET" profile and are well adjusted when the disc blades from the rear gang pass over the center of the spacing from the disc blades on the front gang and when their rotation are equivalent, that is, when they have the same number of rotations in a determined space.

Cutting depth

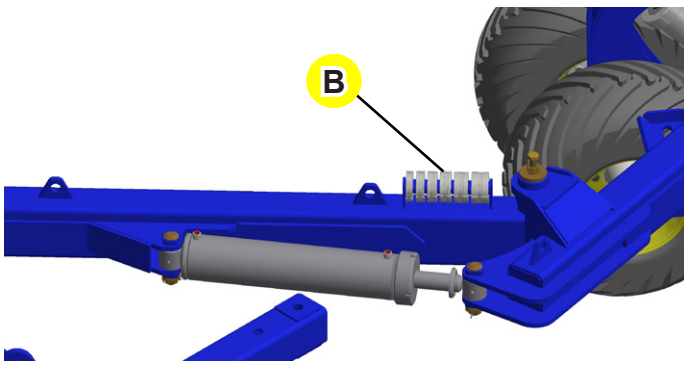


The cutting depth is adjusted by the following points:

1) Disc gang opening

A greater opening (A) between the disc gangs is adequated when working in harder soils, which the disc blades will have more difficult to penetrate. Reduce the opening when working on light and loose soils.

Note that the harrow opening may change the cutting angle of the front and rear disc gangs.



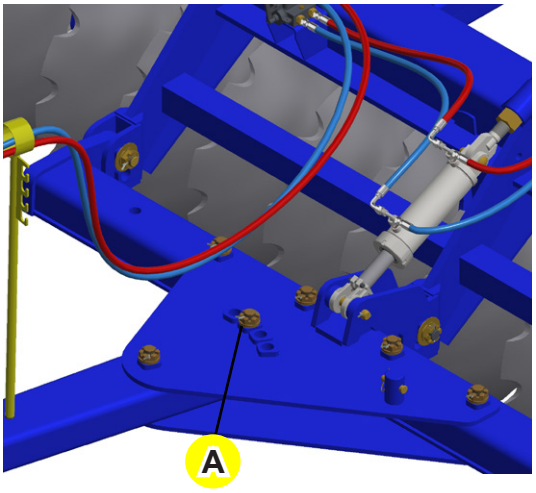
NOTE **Use the rod stops (B) if it is necessary to decrease the cutting depth of the harrow, always maintaining the same disc blades depth adjustment.**

Cutting depth

2) Drawbar angle

The holes (A) in the upper and lower plates determine a greater or smaller cutting width and also performs the lateral displacement of the harrow.

In normal conditions, the drawbar should operate in the central hole of the fixation plates.



IMPORTANT

- **To start the harrowing, we recommend using an average opening in the disc gangs and in the holes of the drawbar plates. Adjust it, if necessary.**
- **The harrowed soil is always on the left hand side of the operator (harrow closed side).**
- **Try to make a good finish between passes. Avoid the formation of furrows or untilled strips.**
- **The tractor and harrow drawbar should be as aligned as possible related to the work direction.**

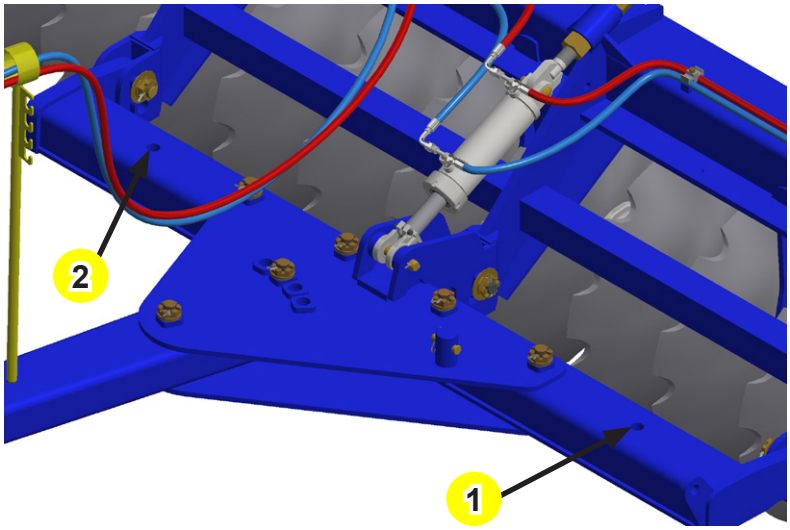
Posição do trator em relação à passada anterior - Deslocamento lateral

The lateral displacement is used to better position the tractor regarding the previous furrow, avoiding leaving a trace and giving a reference to the operator.

This position is obtained according to the tractor gauge and cutting width of the harrow.

Whenever possible, the tractor should pass over the unworked soil and near the previous furrow.

The displacement is done by changing the drawbar in the hitch bar, as follows:



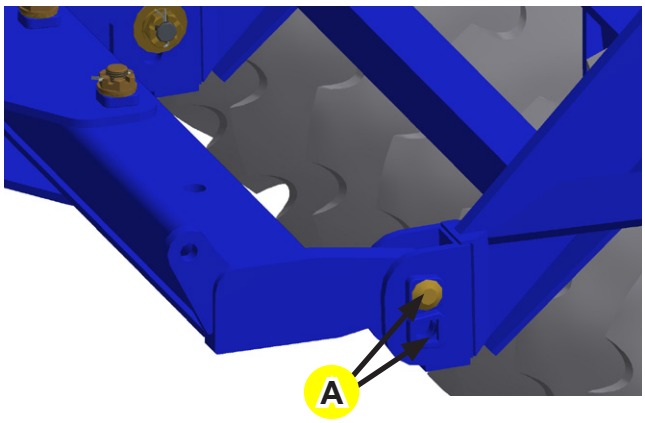
Normal position: Used on most situations.

Position #1: Allows the tractor to approach the previous furrow.

Position #2: Allows the tractor to move away from the previous furrow.

Fixation holes on the hitch bar

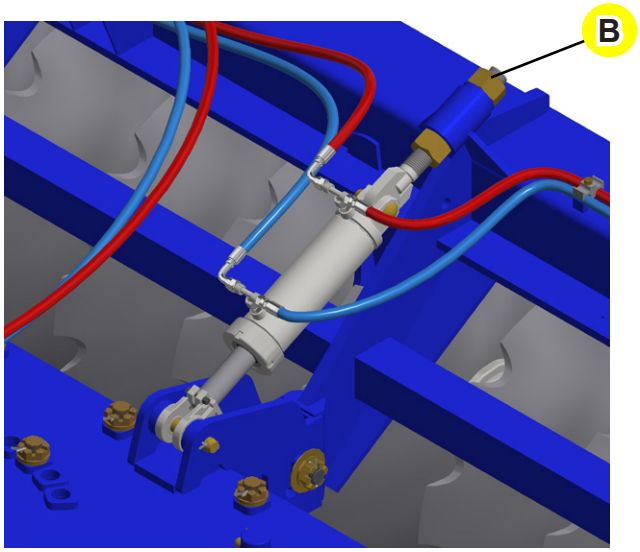
The fixation holes on the hitch bar (A) on the front frame are used to obtain a better drawbar leveling related to the height of the traction bar of the tractor.



Leveling spindle adjustment

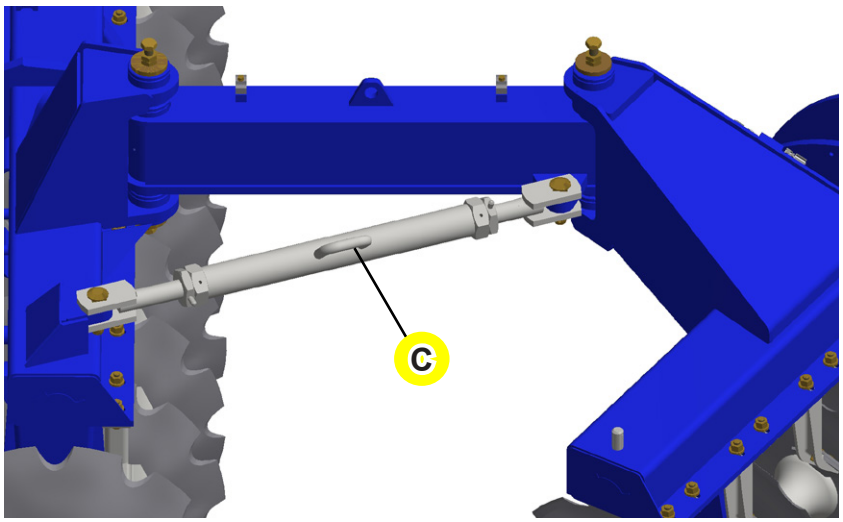
The leveling spindle (B) allows a fine adjustment to level the harrow during the transport.

When using a tractor with a different height of the traction bar related to the soil, it is possible to re-adjust the spindle.



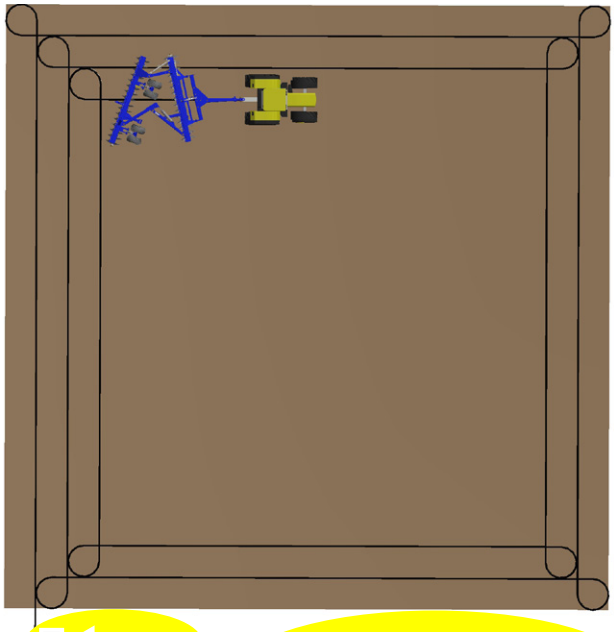
Junction extensor adjustment

The extensor adjustment (C) allows the displacement of the rear gang related to the front gang, providing a better finishing between the passes and avoiding the formation of undesirable windrows or furrows.

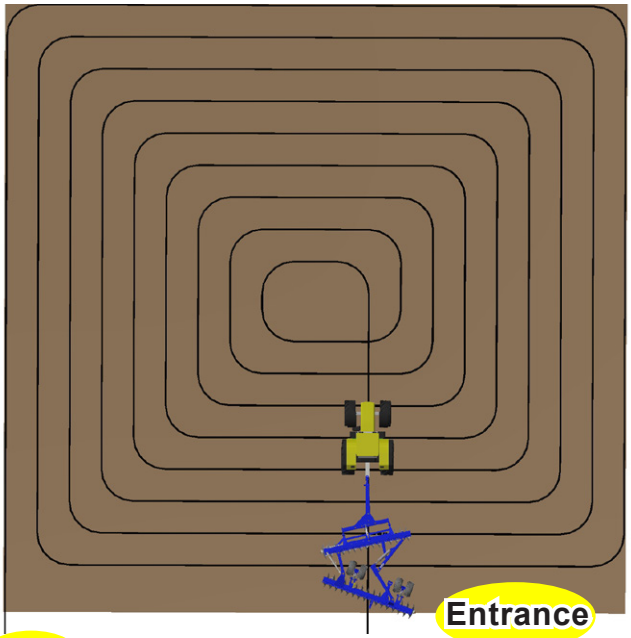


Ways to start the harrowing

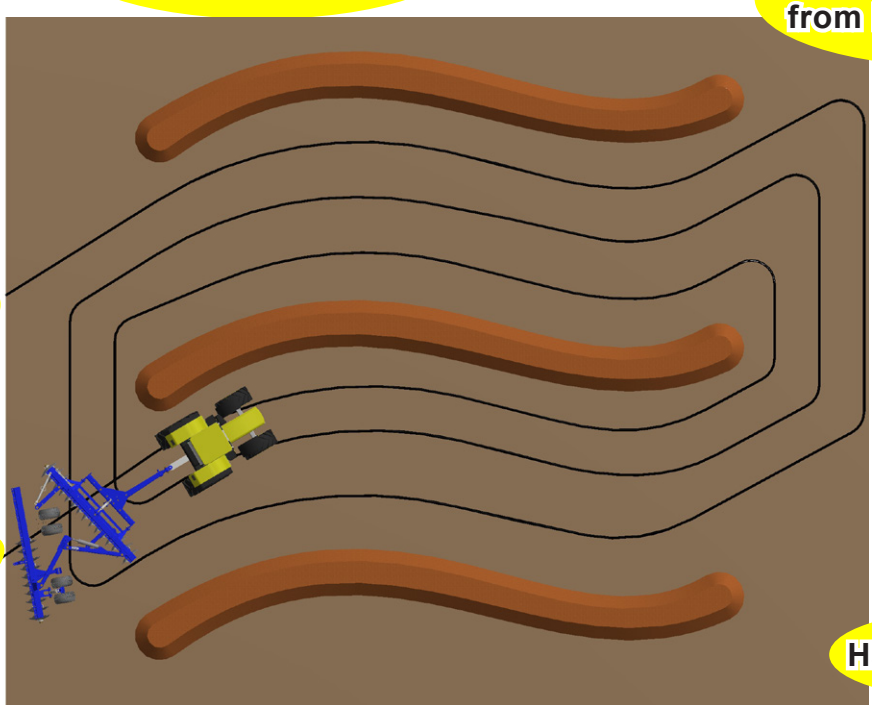
Regardless of the format and size of the field, the harrowing is made basically in two ways: from outside to inside or from inside to outside.



Harrowing in squares from outside to inside



Harrowing in squares from inside to outside



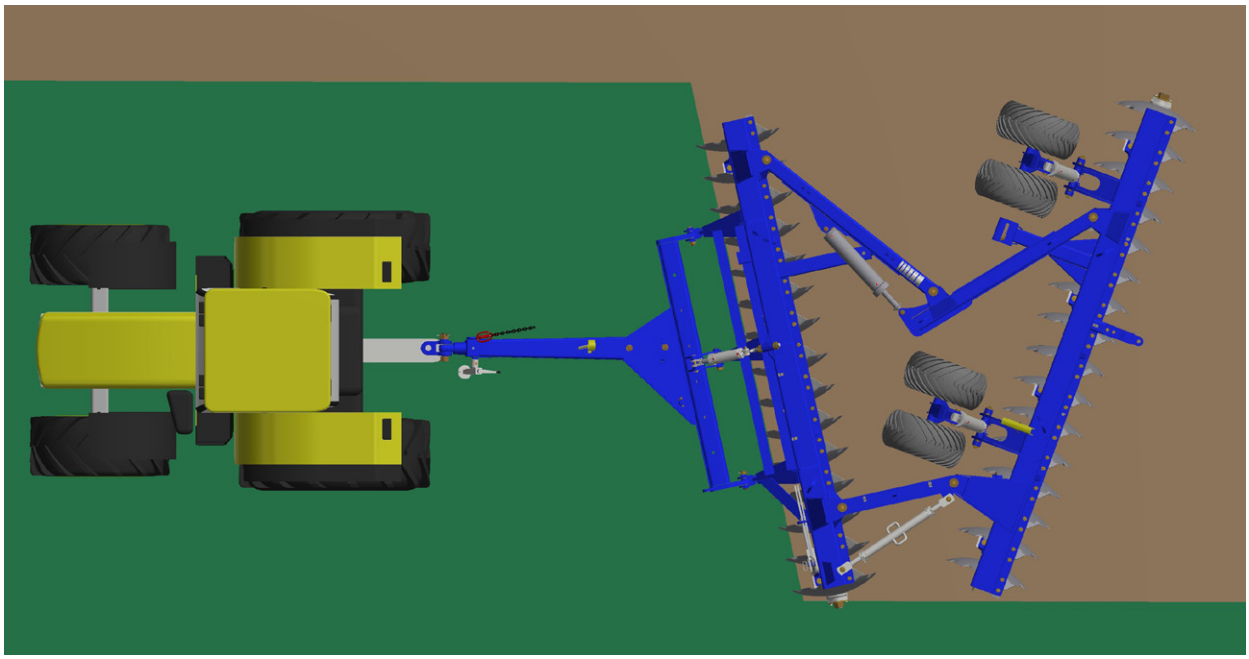
Harrowing in level

IMPORTANT

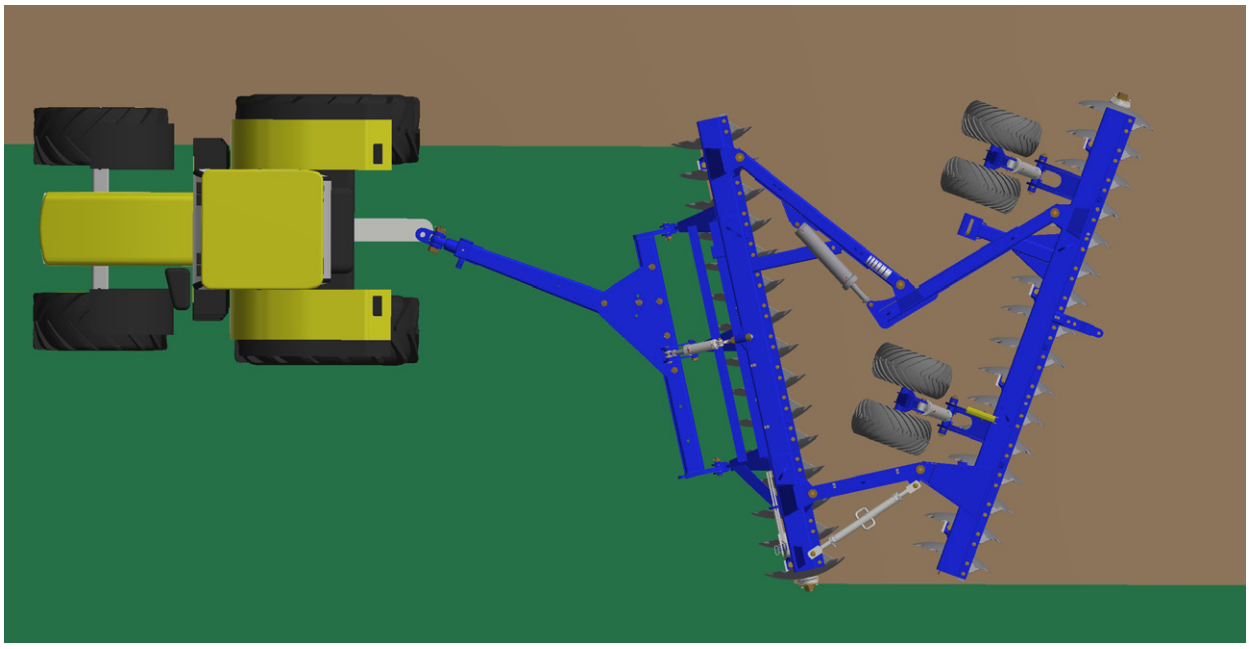
- **Note that the harrowed soil is always on the left hand side of the operator.**
- **Being the disc gangs lowered, only maneuver to the left (harrow closed side).**

Correct way for harrowing

Correct



Incorrect



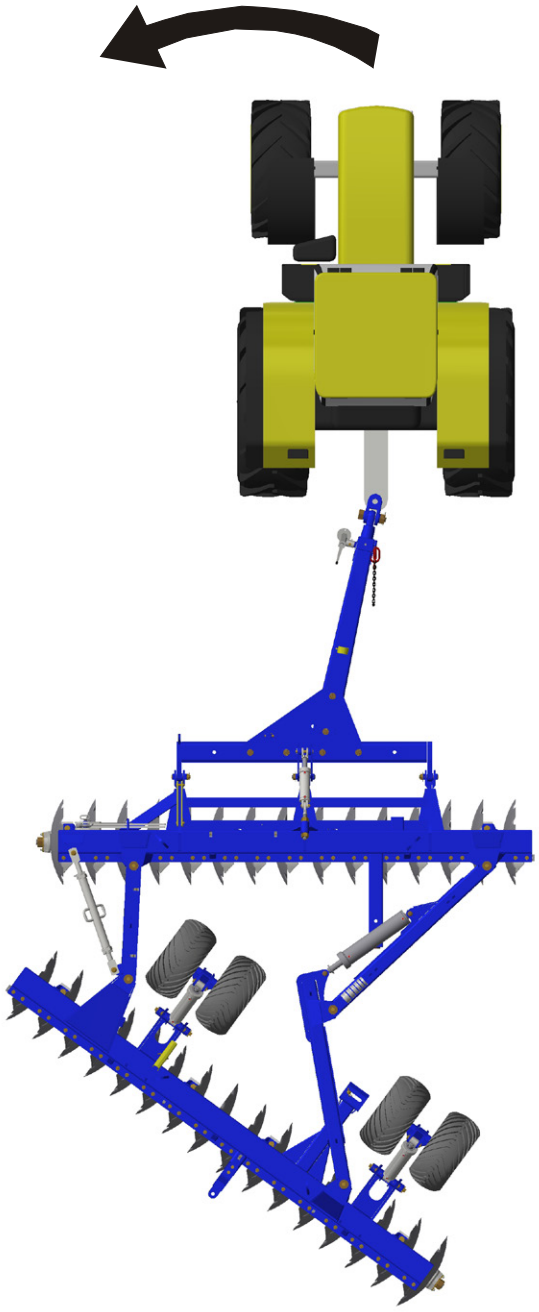
IMPORTANT • Never let the tires pass over the area that was already harrowed.

Direction of the maneuvers

As previously mentioned, the harrow provides several working angles to operate properly in all types of soil. However, this harrow requires certain care during operations, like never make maneuvers to the right, because the angle formed on its vertex transmits great effort to the equipment, overloading traction components such as the hitch bar, the drawbar and other fixation parts.

ATTENTION

- **Being the disc gangs lowered, it is necessary to maneuver to the left to avoid overloads.**
- **Following these instructions also avoids the undesirable formation of large furrows in the maneuver spots.**



IMPORTANT

Being the harrow opened, never lower the wheelset system for transportation, as this will cause damage to the system.

Troubleshooting

PROBLEM	CAUSES	POSSIBLE SOLUTIONS
Tractor steering wheel pulling to the right.	Too much angle on the front gang or too small on the rear gang.	Reduce the angle from the front gang or increase the angle from the rear gang.
	Drawbar touching the stop to the left.	Move the drawbar to the left.
Disc gangs are not on harrowing level.	Front and rear disc gangs are not operating on the same depth.	Adjust the angle of the disc gangs.
Furrow opened on the left side.	Speed is too low for the soil conditions.	Increase the speed.
	Tractor being positioned far on the right.	Position the tractor in a way that the front disc on the left pass on the edge of the furrow.
	Incorrect adjustment of the disc gangs laterally.	Move the rear disc gang to the left or the front disc gang to the right.
Windrows forming on the left side.	Insufficient overlapping. Incorrect rear disc gang adjustment.	If windrows are forming, move the front disc gang to the left or the rear disc gang to the right.
Locked disc gangs.	Wet field.	Let the field dry out or penetrate the disc blade superficially to help the drying process.
	Maximum angle on the disc gangs adjustment.	Reduce the angle.
	Deep penetration on wet soil.	Use the rod stops to decrease the depth. Lift the disc blade to reduce the penetration.
	Worn out / incorrectly adjusted scrapers.	Adjust or change the scrapers when necessary.

Troubleshooting

PROBLEM	CAUSES	POSSIBLE SOLUTIONS
Quick couplers do not adapt.	Different type of quick couplers.	Use male and female quick couplers from the same type.
Hoses leaking with fixed terminals.	Insufficient tightening.	Retighten carefully.
	Lack of sealing material on the thread.	Use thread sealing tape and retighten carefully.
Hydraulic cylinder leaking.	Damaged repairings.	Replace the repairings.
	Damaged rod.	Replace the rod.
	Oil with impurities.	Replace the oil, repairings and filter elements.
	Working pressure superior than the recommended one.	Adjust the control valve using the relief valve with the aid of a pressure gauge. Normal pressure 180 Kgf/cm^2
Quick couplers leaking.	Insufficient tightening.	Retighten carefully.
	Lack of sealing material on the thread.	Use thread sealing tape and retighten carefully.
	Damaged repairings.	Replace the repairings.

Operations - Important points

- Retighten nuts and bolts after the first day of work and check the conditions of all pins and cotter pins. Then, retighten every 24 operating hours.
- Special attention should be given to the disc gangs, retightening daily during the first week of use. Then, retighten periodically.
- Carefully observe the lubrication intervals.
- Always use a contention device to inflate the tires (tire inflation cage).
- The correct tire inflation is important; keep the pressure according to the instructions on pages 9 and 10.
- Choose a gear that allows the tractor to maintain certain power reserve, ensuring against unforeseen efforts.
- Speed is relative to the tractor gear and can only be determined by local conditions. We adopted an average 5 to 9 km/h, which is not advisable to overcome to maintain service efficiency and avoid possible damages to the equipment.
- Before maneuvering the headboards, activate the hydraulic cylinder gradually to lift the disc gangs.
- During the harrowing (being the disc blades on the soil), never maneuver to the right, because the angle formed by the disc gangs start to transmit great effort to the equipment, overloading the traction components.
- During working or transportation, do not allow passengers on the tractor or equipment.
- Remove pieces of wood or any object that may attach in the disc blades.
- When working on hard soils, which the disc blades penetration is difficult, the depth can be minimum and the operation may be unsatisfactory. On these cases, we recommend using an equipment that is more appropriate.
- Relieve the control valve pressure before relieving the quick couplers and when doing any verification in the hydraulic cylinder.
- The drawbar must remain loose during working and fixed during transportation.
- As previously mentioned, these harrows have several settings. However, only the local conditions can determine the best adjustment thereof.

Lubrication

To reduce the wear caused by the friction between the moving parts of the harrow, it is necessary to carry out a correct lubrication, as described below.

1) Every 24 operating hours, lubricate the articulations through the grease fittings in the following way:

• Be sure about the lubricant quality, with relation to its efficiency and purity, avoiding the use of products contaminated by water, earth and others.

• Remove the remainder old grease around the articulations.

• Clean the grease fittings with a cloth before inserting lubricant and replace the damaged ones.

• Apply an enough amount of new grease.

• Use medium consistency grease.

2) The lubrication of the roller bearing should be done in the same aforementioned period. (24 hours).

2.1) The roller bearings with oil bath work in constant lubrication, but it is still necessary to give them the following attention:

• In a flat place, check the oil level of each bearing before using the harrow for the first time and every day of the first week.

• Then, start to check weekly.

• Change all the oil every 1,000 working hours.

• Use only SAE 90 mineral oil.

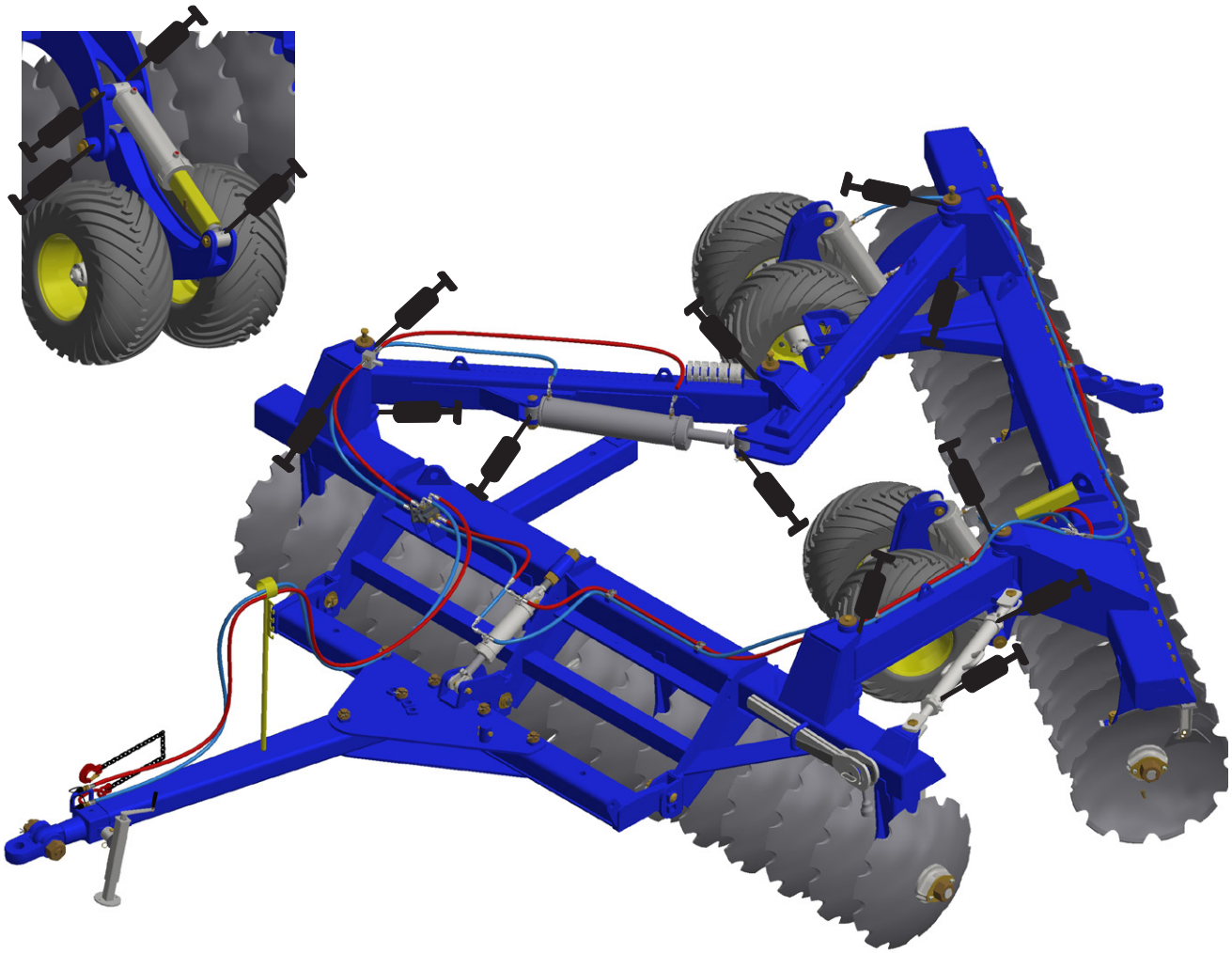
NOTE

The suitable level is when the oil reaches the hole of the plug, being the harrow in a flat place.

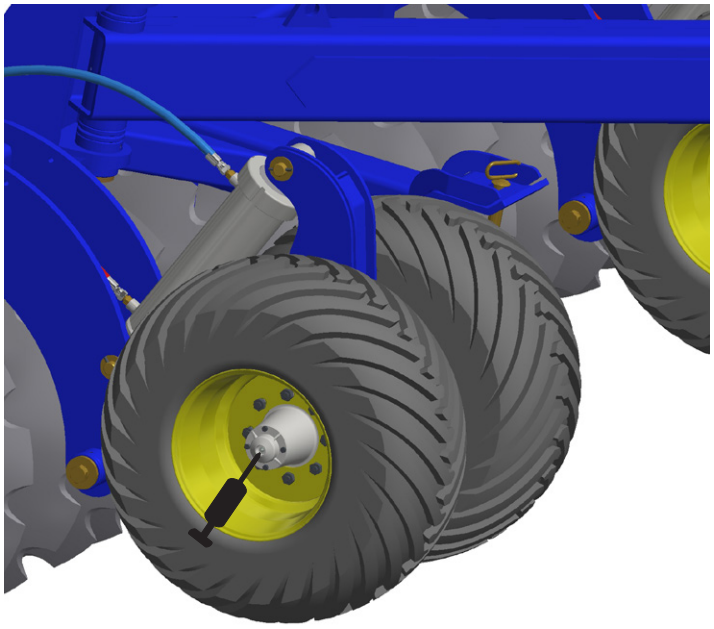
The oil volume on the DM bearings is 650 ml (GAPCW).

The oil volume on the DM bearings is 980 ml (GASPCW).

Lubricate every 24 hours of service



Lubricate every 100 hours of service



Harrow maintenance

• During offseason wash the harrow, repair any damaged paintwork, protect the disc blades with oil, lubricate all grease fittings and store the plow in a covered and dry place, avoiding the direct contact of the disc blades with the soil.

• The disc blades must be replaced as soon as they are providing a low yield, mainly because the reduction in its diameter, loss of cut and other damages that may occur during the job.

• After some hours of operation, the bolts on the harrow must be checked to see if they are properly tightened. To assure a great performance and avoid wear and rupture, these bolts must be tightened every so often.

• Check wear occurence on all moving parts. Replace any part, if necessary.

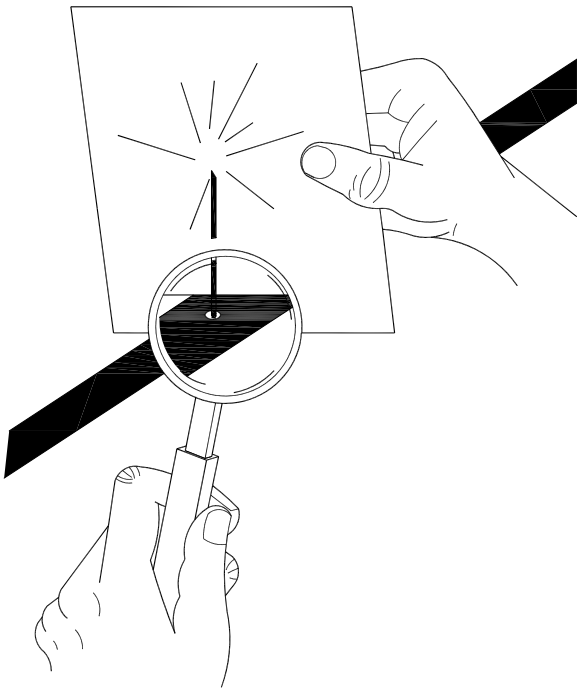
• Replace the missing or damaged safety stickers. Marchesan supplies these stickers, upon request and indication of their respective serial numbers. The operator must know the need and importance to keep the stickers in the proper place and in good conditions. The operator also have to know the need to follow the instructions, as the lack of safety may increase the risk of accidents.

Maintenance precautions

Caution! Hydraulic oil leakage may be strong enough to penetrate the skin and cause serious injuries to health. Oil leakage through a tiny hole may seem invisible. Use a piece of wood instead of your hand to check a possible leakage.

Keep unprotected parts of the body, such as your face, eyes and arms as far as possible from a suspected leak. A splash of hydraulic oil can even cause gangrene or other maladies.

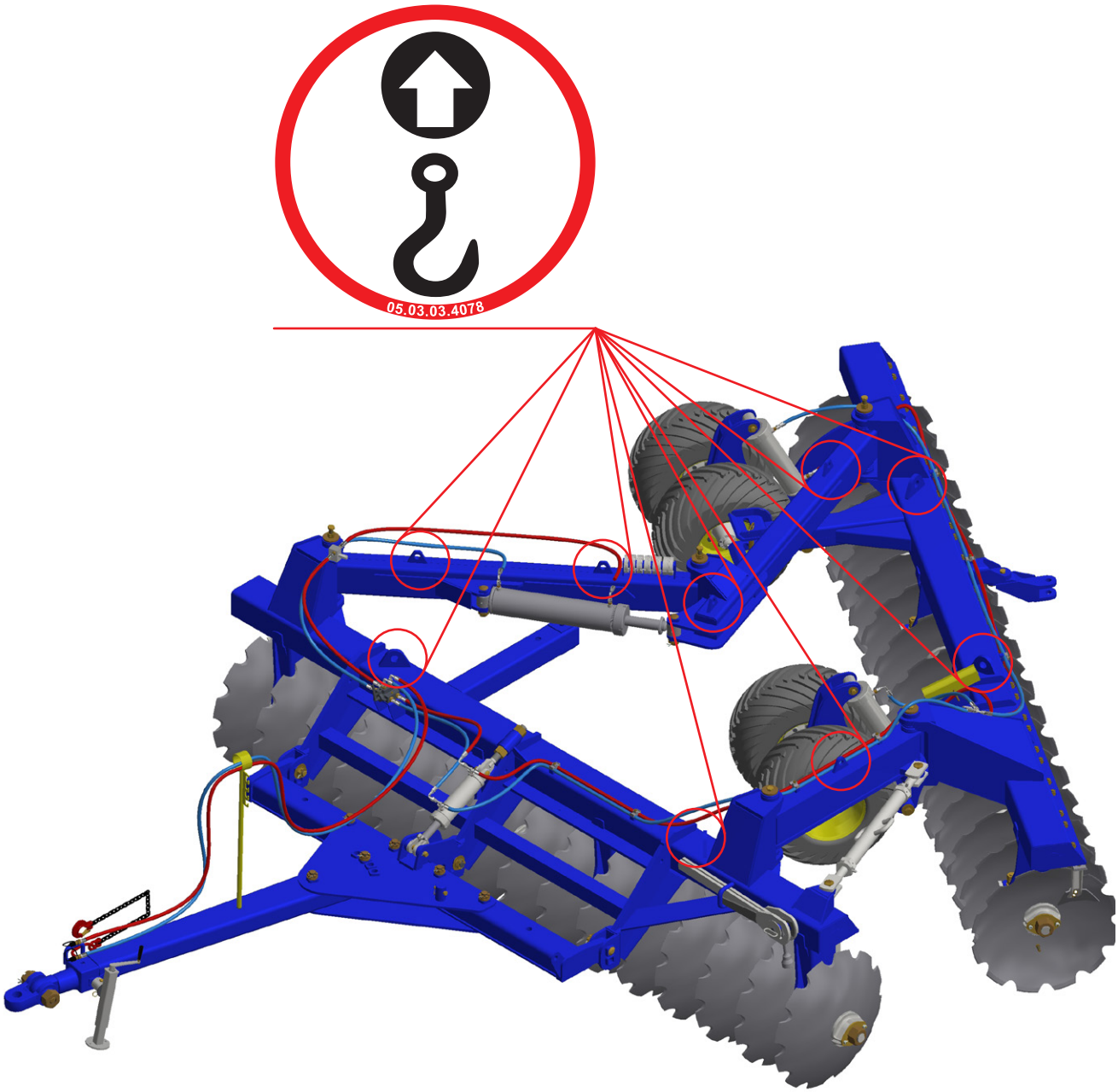
In case of such kind of accidents or any other, consult a doctor immediately. If such doctor does not possess proper knowledge of this kind of problem, ask for a referral or search to find the proper treatment.



NOTE **Use TATU original parts only.**

Lifting points

These harrows have adequate lifting points, located on the frame. When assembling or carrying out maintenance procedures, use a hoist to hitch the cables to the lifting points to lift the equipment.



Calculation of hourly income

To calculate the hourly income, use the following calculation:

$$R = \frac{L \times V \times E}{X}$$

Where:

R = Hourly income;

L = Harrow cutting width (meters);

V = Average speed of the tractor (meters per hour);

E = Efficiency: 0.90;

X = Hectare value = 10,000 m^2.

Example with a 9017 GASPCW (29 disc blades):

R = ?

L = 5.93 m

V = 6,000 m/h

E = 0.90

X = 10,000 m^2

$$R = \frac{5.93 \times 6{,}000 \times 0.90}{10{,}000}$$

R = 3.20 hectares per hour.

NOTE **The harrow hourly income can vary by physical factors such as humidity, slope, soil hardness, appropriate adjustments and especially the working speed.**

Based on this calculation, the table on the following page shows the average hourly income and also for a day, that is, nine (9) hours of work.

Important data

Average income table

Model	Number of disc blades	Cutting width (mm)	Hourly income (ha)	Daily income (ha)
GAPCW 8013	31	4,885	2.64	23.74
	35	5,565	3.01	27.05
	39	6,245	3.37	30.35
	41	6,585	3.56	32.00
	45	7,265	3.92	35.31

Model	Number of disc blades	Cutting width (mm)	Hourly income (ha)	Daily income (ha)
GASPCW 9017	23	4,610	2.49	22.41
	25	5,050	2.73	24.54
	29	5,930	3.20	28.82

NOTE **An average speed of 6 km/h was adopted to prepare the tables above.**

To know how many hours will be spent to work in a certain previously known area, it is necessary to divide the value of the area by the hourly income.

Example: An area of 100 hectares to be worked with a 9017 GASPCW that has 29 disc blades (Hourly income = 3.20 ha).

So: $\frac{100}{3.20} = 31.25$

Approximately will be spent 31 (Thirty-one) hours to work in an area of 100 hectares.

Torque table

TORQUE VALUES CHART						
Bolt Diameter	Grade 2		Grade 5		Grade 8	
	Coarse	Fine	Coarse	Fine	Coarse	Fine
1/4”	50 In. Lbs.	56 In. Lbs.	76 In. Lbs.	87 In. Lbs.	9 Ft. Lbs.	10 Ft. Lbs.
5/16”	8 Ft. Lbs.	9 Ft. Lbs.	13 Ft. Lbs.	14 Ft. Lbs.	18 Ft. Lbs.	20 Ft. Lbs.
3/8”	15 Ft. Lbs.	17 Ft. Lbs.	23 Ft. Lbs.	26 Ft. Lbs.	33 Ft. Lbs.	37 Ft. Lbs.
7/16”	25 Ft. Lbs.	27 Ft. Lbs.	37 Ft. Lbs.	41 Ft. Lbs.	52 Ft. Lbs.	58 Ft. Lbs.
1/2”	35 Ft. Lbs.	40 Ft. Lbs.	57 Ft. Lbs.	64 Ft. Lbs.	80 Ft. Lbs.	90 Ft. Lbs.
9/16”	50 Ft. Lbs.	60 Ft. Lbs.	80 Ft. Lbs.	90 Ft. Lbs.	115 Ft. Lbs.	130 Ft. Lbs.
5/8”	70 Ft. Lbs.	80 Ft. Lbs.	110 Ft. Lbs.	125 Ft. Lbs.	160 Ft. Lbs.	180 Ft. Lbs.
3/4”	130 Ft. Lbs.	145 Ft. Lbs.	200 Ft. Lbs.	220 Ft. Lbs.	280 Ft. Lbs.	315 Ft. Lbs.
7/8”	125 Ft. Lbs.	140 Ft. Lbs.	320 Ft. Lbs.	350 Ft. Lbs.	450 Ft. Lbs.	500 Ft. Lbs.
1”	190 Ft. Lbs.	205 Ft. Lbs.	480 Ft. Lbs.	530 Ft. Lbs.	675 Ft. Lbs.	750 Ft. Lbs.
1.1/8”	265 Ft. Lbs.	300 Ft. Lbs.	600 Ft. Lbs.	670 Ft. Lbs.	960 Ft. Lbs.	1075 Ft. Lbs.
1.1/4”	375 Ft. Lbs.	415 Ft. Lbs.	840 Ft. Lbs.	930 Ft. Lbs.	1360 Ft. Lbs.	1500 Ft. Lbs.
1.3/8”	490 Ft. Lbs.	560 Ft. Lbs.	1100 Ft. Lbs.	1250 Ft. Lbs.	1780 Ft. Lbs.	2030 Ft. Lbs.
1.1/2”	650 Ft. Lbs.	730 Ft. Lbs.	1450 Ft. Lbs.	1650 Ft. Lbs.	2307 Ft. Lbs.	2670 Ft. Lbs.

GRADE 2
No Marks.

GRADE 3
3 Marks.

GRADE 8
6 Marks.

[G:\VALSON\Manuais_Inglês\Torque]

NOTE **For metric conversion:**

- **Multiply inch-pounds by .113 to convert to newton-meters (Nm).**
- **Multiply foot-pounds by 1.356 to convert to newton-meters (Nm).**

Important

ATTENTION

MARCHESAN S/A reserves the right at any time to make improvements in the design, material or specifications of machinery, equipment or parts without thereby becoming liable to make similar changes in machinery, equipment or parts previously sold.

Images are for illustration purposes only.

Some illustrations in this manual appear without the safety devices, removed to allow a better view and detailed instructions. Never operate the equipment without these safety devices.

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Notes