

**GRÉGOIRE**  **BESSON**

# HELIPLow

Single beam subsoiler

## OPERATOR'S MANUAL MAINTENANCE INSTRUCTIONS



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# NOTES

# 1. INTRODUCTION



## **READ CAREFULLY THIS MANUAL**



To properly start, operate and service your equipment, follow all instructions given in this manual.

**THIS MANUAL SHOULD BE CONSIDERED AS A PART OF THE EQUIPMENT AND SHOULD FOLLOW IT WHEN YOU SELL IT.**

**LEFT HAND SIDE AND RIGHT HAND SIDE, FRONT AND REAR** are determined looking from equipment towards tractor when in work.

**ALL INFORMATIONS, PICTURE, SPECIFICATIONS** in this manual are based on the newer information available at the time of publication. Pictures and drawings might not represent standard equipment and show optional attachments.

Manufacturer reserves right to make any changes at all time **without any obligation to notice or to modify any delivered or already sold machine.**

**If the machine has been modified in any way from the original design without written agreement from Grégoire-Besson, the manufacturer does not accept any liability for injury or warranty. Warranty would become void.**



This symbol is used in the following manual to **catch your attention on warnings concerning your safety.**

So please when you see it in this manual or on the equipment, **strictly follow given information.**

Grégoire-Besson equipments are exclusively designed to be used for regular farm tillage in farmed fields. Manufacturer shall not be responsible for damage or injury resulting from any other use.

## **PRODUCT IDENTIFICATION NUMBER**

Please record here purchasing date, model and serial number of your equipment (refer to identification plate on hitch). Always refer to these information to get prompt and good service.

Purchasing date : .....

Model : .....

Serial number : .....

Salesman's phone : .....

## 2. SAFETY INSTRUCTIONS

### 2.1. SAFETY STICKERS



Reference : UI 1980

#### READ OPERATOR'S MANUAL

Read operator 's manual and safety instructions before starting the use of your equipment and follow them while using.



Reference : UI 1978

#### STAY IN A SAFE POSITION

Do not climb on the machine. Do not strand between machine and tractor.



Reference : UI 127

#### MOVE AWAY FROM THE MACHINE

Danger in the working area, stay clear from the machine.



Reference : UI 126

#### UNFOLDING AREA

Stay clear of equipment when folding or unfolding.



Reference : UI 131

#### SECURE THE MACHINE BEFORE ACTION

Always install all lockup devices to secure machine before any intervention on it.



Reference : UI 1979

#### MOVING PARTS

Always stay far away from parts in movement.



Reference : UI 128

#### HYDRAULIC LEAK AND MAINTENANCE

Caution, high pressure fluids can cause injury. Follow safe practices.



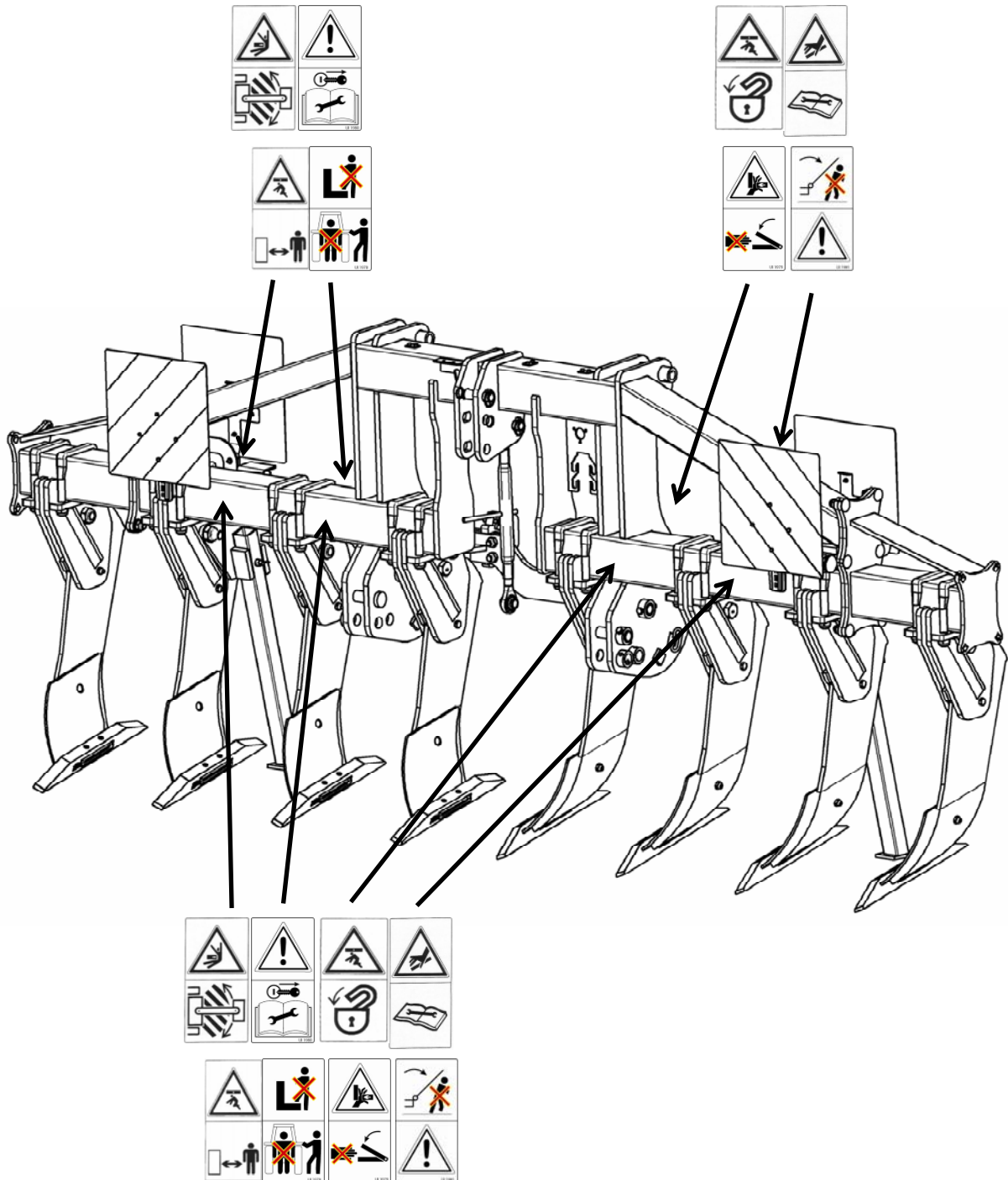
Reference : UI 1981

#### MACHINE UNFOLDING

Never stand under machine lateral sections.  
Always store machine unfolded.

### Positioning safety stickers on the machine

When cleaning the machine, do not damage stickers.  
Replace any damaged or missing sticker.



## 2.2. SAFETY WHILE ATTACHING AND DETACHING



- Do not let **anyone to stand between the machine and the tractor** when you back up to hitch.
- Before leaving the tractor to hitch or unhitch, set tractor parking brakes.
- Do not try to hitch the machine if you do not have the right size pins (diameter and length shall be compatible between both tractor and machine).
- Completely lower the machine to the ground before unhitching. Make sure it is on a level and firm surface.
- Remove pressure from hydraulic lines before disconnecting them.
- Before leaving the machine for storage, make sure it is in a safe place and that there is no risk to damage whether anything or anyone.

## 2.3. SAFETY WHILE CONNECTING HYDRAULIC LINES



- Hydraulic circuit might be highly pressurised.
- **Never use your hands to locate a hydraulic leak.** Hydraulic fluids escaping under pressure have sufficient force to penetrate the skin, causing severe injury. In case of any injury, **see a doctor immediately.**
- For equipments loaded with several hydraulic connectors, **make logical and appropriated connections.**
- Before connecting hydraulic circuit, **make sure that there is no pressure on both sides (tractor and machine).**
- Regularly check hydraulic lines and connections. **Replace any damaged or leaking component** by an original part with the same specifications.
- Before any intervention on hydraulic circuit, **lower machine to the ground and release pressure moving control lever in the tractor's cab.**

## 2.4. SAFETY WHILE OPERATING MACHINE

- **Never attempt** any intervention on the machine while it is in motion.
- Wear close **fitting clothing** and **appropriate safety devices** for the job you have to do (heavy leather gloves, safety shoes, earplugs, ... ).
- Do **not** allow **anyone to stand close to the machine.**
- Do **not** attempt to do **any adjustment if you have not perfectly understood its procedure.**
- Always use tools or equipments appropriate to the job you are doing. All Grégoire-Besson equipments are metric standards.
- Learn how to operate your machine and how to use its controls. Do not let anyone operate without instruction.
- Do not extend too much adjustment turnbuckles to avoid any untimely pull-out.
- Only one person (the operator) should be in the tractor's cab when it is in operation. **No one on the machine while working or travelling on the road.**



If your machine is equipped with a hydraulic folding mechanism, **always use it from tractor's cab, once you are sure that folding area is free from spectators or obstacles.**

## 2.5. SAFETY FOR MAINTENANCE



During maintenance operation, comply with the following rules.

- Maintenance area shall be **clean, dry, with enough light and ventilation**.
- For any intervention on the machine in raised position, **always securely support all components** before starting maintenance.
- After servicing remove all tools, components and parts you used.
- Regularly check tightness of wheel studs, tine bottom studs, and other bolts and nuts.
- **Always use genuine parts corresponding to manufacturer's technical specification requirements.**

## 2.6. SAFETY FOR ON HIGHWAY TRANSPORT

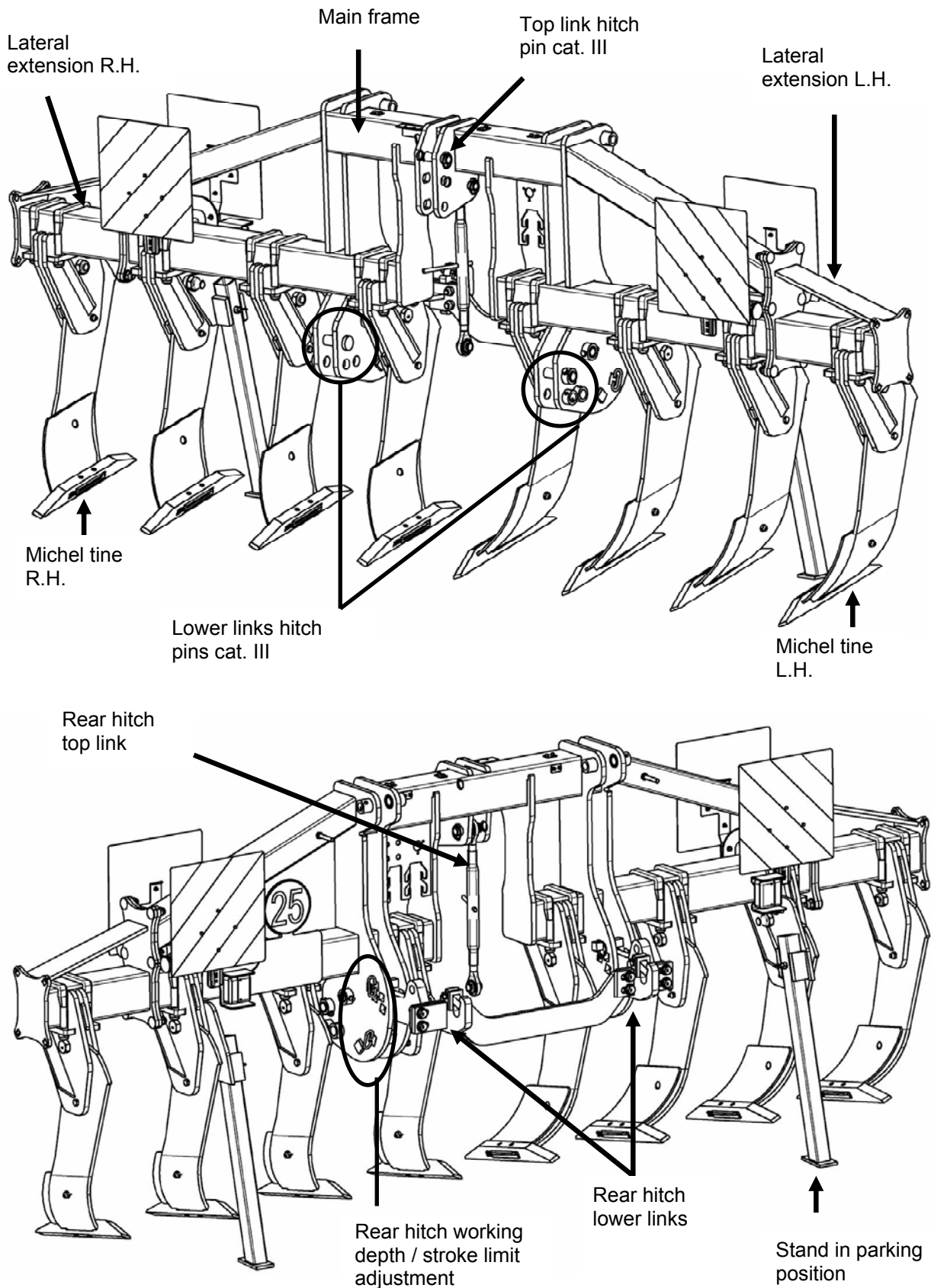


FOR YOUR OWN SAFETY AND THE ONE OF THE OTHER, RESPECT THE FOLLOWING RULES :

- All Grégoire-Besson equipments shall be used **complying with area's current rules and laws** concerning **safety instructions, accident prevention** and **provision of Highway Code**.
- Always **check for wheels studs tightness before road transport**.
- **Use all devices required by your area's current laws** (lights, reflectors, signs, ... ). You might remove them in during field operation to prevent from any damage. It is the operator's responsibility to comply with current law and to follow its evolutions.
- Regularly check hitching pins, change them if necessary. Tractor's ball joint may also wear, do not hesitate to replace them with new ones having at least Waltersheid fabrication quality.
- Drive **at reasonable speed** complying with local laws **to always keep control** of tractor and equipment. Pay special attention on irregular or rough roads. **Do not attempt to drive down a hill faster than it could be possible to drive it up**.
- **Never attempt any manoeuvre if area is not free from spectators**.
- If your machine is equipped with a **folding mechanism** (manual or hydraulic), **use it making sure folding area is free from spectators** and obstacles.
- Follow all **safe driving practices** when travelling, moreover **on corners, rough or narrow roads**.
- When **leaving tractor** even for a short period, **shut off engine, remove ignition key and set parking brakes**.
- Forbid anyone to stand between tractor and machine or on the machine travelling on the road.

### 3. MACHINE DESCRIPTION

#### 3.1. IDENTIFICATION VIEWS



## 3.2. TECHNICAL SPECIFICATIONS

Specification	Standard equipments	Optional equipments
Front 3 points linkage	<ul style="list-style-type: none"> <li>In yoke Ø III, width III</li> </ul>	
Frame	<ul style="list-style-type: none"> <li>Main frame single beam 150 x 150 mm</li> <li>Parking stand with working position support</li> </ul>	<ul style="list-style-type: none"> <li>Pair of gauge wheels tyres 10 / 75 x 15</li> <li>Lateral extensions 0.5 m, 1 tine for 3.00 m frame</li> </ul>
Underbeam clearance	<ul style="list-style-type: none"> <li>900 mm</li> </ul>	
Working tines	<ul style="list-style-type: none"> <li>Tine fixation with U bolts</li> <li>Curved tines type « Michel » in special treated steel</li> <li>Bolted point on tilted support</li> </ul>	<ul style="list-style-type: none"> <li>Counter plates tines fixation</li> <li>Carbide bolted point on tilted support</li> <li>Reversible share</li> </ul>
Safety device	<ul style="list-style-type: none"> <li>Shear bolt (T)</li> </ul>	
Rear hitch	<ul style="list-style-type: none"> <li>Floating rear hitch semi-automatic cat. II</li> </ul>	<ul style="list-style-type: none"> <li>Hitch cat. III</li> <li>Hydraulic rear hitch</li> <li>Rear crumbler roller tube or full metal bar, 9 bars Ø 500 mm 10 bars Ø 600 mm</li> <li>Rear twin roller</li> </ul>

A large choice of options is available to improve machine's job.

Grégoire-Besson authorized dealers know area and working conditions. They may give information according to technical choices and latest equipments evolutions.

Grégoire-Besson is also represented on farm equipment shows.

## 3.3. DIMENSIONS AND WEIGHTS

Transport Width	Nb of blades	Working Width	Over all length (approx.)	Indicative weight
3.00 m	4	2 m to 3 m	1.10 m	700 kg
	6	3 m	1.10 m	800 kg
3.45 m	6	3.50 m	1.10 m	850 kg
	8		1.10 m	1 050 kg
4.00 m	6	3 m to 4 m	1.10 m	1 000 kg
	8	4 m	1.10 m	1 100 kg

Dimensions and weights are indicative and subject to variations according to equipments and options.

Note : after use, ground or residue accumulations may increase machine's weight.

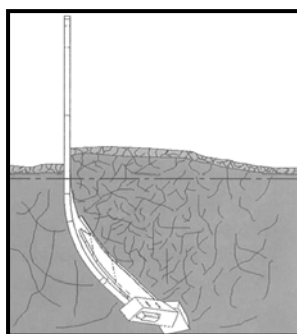
## 3.4. LIGHT AND SIGNS KITS



Light and signs kits are available for all Grégoire-Besson equipments. Contact an authorized dealer.

Note: it is the operator's responsibility to comply with local current applicable law before any transport on public road.

### 3.5. « MICHEL » TINE



Michel tine works in deep. It loosens the ground without any lay mixing.

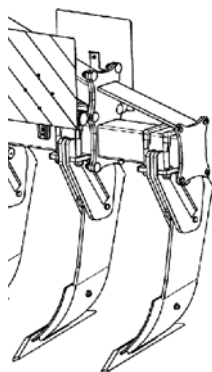
Tine passage creates a “wave effect” responsible of ground fissuring all along worked depth. On the surface, it seems that nothing changed : no clods or rocks climbing, top soil and trash stays on top. Erosion and water run-off risks are avoided.

Tine is equipped with a point bolted on a tilted support. It can be used in all conditions without any risks of compaction lay creation.

In a loose and aerated soil, water and air circulation is improved, crop implanting is easier.

### 3.6. OPTIONAL EQUIPMENTS

#### 3.6.1. Lateral frame extensions



Standard Heliplow frame is 3.00 m wide, has 4 to 6 tines. Frame extensions can be added : 0.5 m and 1 tine on each side. This allows adaptation to tractor changing and / or to rear equipment using.



**DANGER** : adding or removing lateral extensions requires precautions. Heavy parts crushing may cause severe injury.

#### 3.6.2. Lateral gauge wheels



One pair of lateral gauge wheels can be added on the machine. Wheels mounting brackets are boltable on main frame (or on extensions).

Setting gauge wheels increases machine width on each side 0.5 m = 1 m total.

Using gauge wheels improves machine stability in the field and controls working depth. Each wheel is equipped with a turnbuckle for height adjustment.

Lateral gauge wheels have tyres 10 / 75 x 15.3, AW Radial profile, Ø 760 mm, width 264 mm, max. pressure : 2.5 bars (follow manufacturer's recommendations).

#### 3.6.3. Rear roller



A rear roller can be added on the machine. Different profiles are available according to desired finishing :

- Crumbler roller tube or full metal bar (not shown) : improves machine's field stability, controls working depth, levels ground surface.
- Twin roller (refer to picture) : a double row of wavy disks works ground surface, improving mixing and organic matter decomposition.

# NOTES

## 4. PREPARING THE TRACTOR

Follow recommendations given in the safety section of this manual. They are not restrictive.

### 4.1. REQUIRED HORSE POWER

Tractor requirements may vary according to ground and working conditions (type of soil, type of tractor, type of tyres, ... ). Following data are only indicative. Ask an authorized Grégoire-Besson dealer for any further information.

Number of tines	Working width	Required HP (average)
4	2.00 à 3.00 m	80 cv
6	3.00 m	120 cv
6	3.50 m	120 cv
8	3.50 m	130 cv
6	3.00 à 4.00 m	130 cv
8	4.00 m	160 cv

### 4.2. TRACTOR WHEELS

#### 4.2.1. Tractor tyres

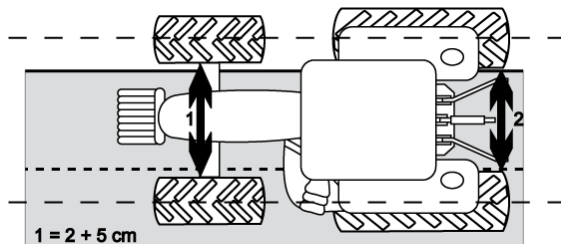
Check tractor tyres general state and pressure. Pressure should be the same on both sides of the tractor for a nice drivability in the field and on the road.



**IMPORTANT** : inflate tyres following manufacturer's recommendations.

#### 4.2.2. Distance between tractor tyres

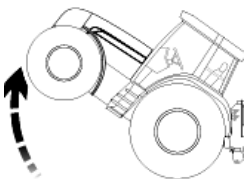
Generally, using a plough with large tillage equipment, the wider is the distance between tyres, the better is the drivability.



To be able to steer the tractor easily, the middle of the front axle shall be lined up with the middle of the rear axle.

In sloping fields, larger distance will provide better stability.

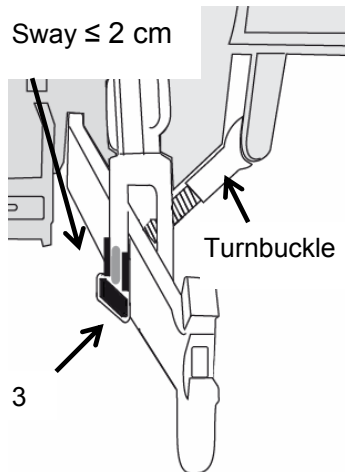
### 4.3. FRONT END WEIGHTING



Wheels weights (front and rear) and front end weights may be required to avoid excessive slippage and to increase stability in rough and sloppy grounds.

Weights shall not be added once all slippage is eliminated. Refer to tractor operator's manual and to tractor's dealer. Follow tyre manufacturer's recommendations.

## 4.4. POSITIONING STABILIZERS

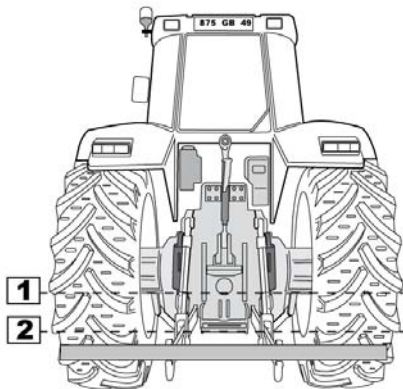


To hitch any tillage equipment on lower link arms, stabilizers shall be set so that arms have minimum lateral sway ( $\leq 2$  cm) and are centred with tractor traction line. This will both prevent from any risk of shock during manoeuvre or road transport and keep machine lined up behind tractor at work.

**Note** : it is easier to adjust and / or service stabilisers bolts and threads before hitching the machine.

Horizontal lift links pins (3) shall be in fixed position to avoid any loose and / or damageable shock.

## 4.5. LIFT LINKS LENGTH

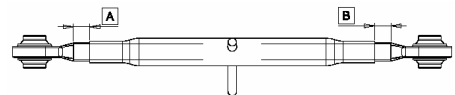


Lift link arms length determines tractor hitch levelling and lift cylinder position at working depth.

- Set lift links length so that tractor hitch is level (refer to picture).
- Set lift links length to have at least 30 mm clearance on lift cylinder rod when machine is working at desired depth. This will give adjustment possibilities for front gang depth from tractor's cab and allow efficient tractor draft control

## 4.6. TOP LINK

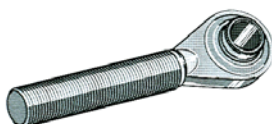
Before attaching the machine, make sure that thread length is the same on both sides of top link. Refer to picture, A shall equal B.



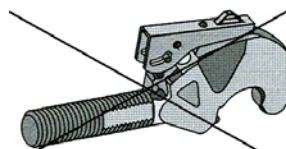
**NOTE** : an excess of grease inside top link tube may make it impossible to shorten. Remove grease fitting to let grease free to go out.

**IMPORTANT** : connection between machine and top link shall be done through a tie rod and never through an automatic hook.

- Automatic hooks sizes and designs change according to models and manufacturers and may cause interference with machine hitch in particular conditions.
- Spring shutter may block hitch ball which may wear or break. This is particularly true for hitches cat III: pin diameter is larger giving less quantity of matter for the ball becoming less strong.



Tie rod  
**CORRECT**



Automatic hook  
**DO NOT USE**

## 5. ATTACHING AND DETACHING

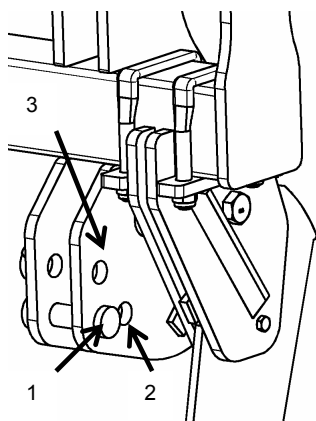
Follow recommendations given in the safety section of this manual. They are not restrictive.

**IMPORTANT** : never attempt to attach the machine if pins or tractor hitching balls are worn or not compatible.

### 5.1. ATTACHING MACHINE TO TRACTOR

#### 5.1.1. Choosing hitching holes for lower links on machine

There are three available holes on machine yoke hitch :



- hole 1 = standard position = to be used in most conditions,
- hole 2 = rear position = to hitch machine closer from tractor when used combined with rear equipment. **Using this hole, pay particular attention on the absence of contact between machine and tractor,**
- hole 3 = upper position = to increase machine versatility and adaptation to particular situations (deep work, large wheels diameter, lift links dimensions and position, ...)

#### 5.1.2. Tractor equipped with tie rods lower links

- Before any manoeuvre, check for diameter and length compatibility between hitch pins and tractor tie rods.
- Remove safety bolts and hitch pins.
- Back up tractor to line up tie rods and machine hitch holes. Always first try to hitch machine as low as possible. In a second time, according to conditions (lift links length, wheels diameter, ... ) other possibilities may be tried.
- Install pins and secure them with their safety bolts.
- If holes are difficult to line up : extend telescopic arms as indicated in tractor operator's manual. Once hitch pins are inserted and secured with their safety bolts, slowly back up tractor to lock back lift arms. Check for lift arms locking.
- Hitch top link.

### **5.1.3. Tractor equipped with automatic hooks lower links**

- Remove safety bolts and hitch pins.
- Remove balls from tractor lift link automatic hooks.
- Check for balls and pins general state and compatibility.
- Install balls on pins through lower machine hitching holes. Secure with safety bolts.
- Slowly back up tractor till automatic hooks are lined up underneath hitch balls.
- Raise tractor hitch about 5 cm above ground surface till automatic hooks are locked.
- Check for automatic hooks latch handles good locking.
- Hitch top link.



**IMPORTANT :** before hitching top link, **make sure to have enough clearance between machine yoke hitch and tractor lower lift links to avoid any possibility of contact from working to raised position.**

### **5.1.4. Hitching top link**

Connexion between top link and machine has to be done through a tie rod (refer to previous section).

Once tractor lift links are correctly hooked up, check top link general state and compatibility with tie rod. Then attach top link in one of the three holes.

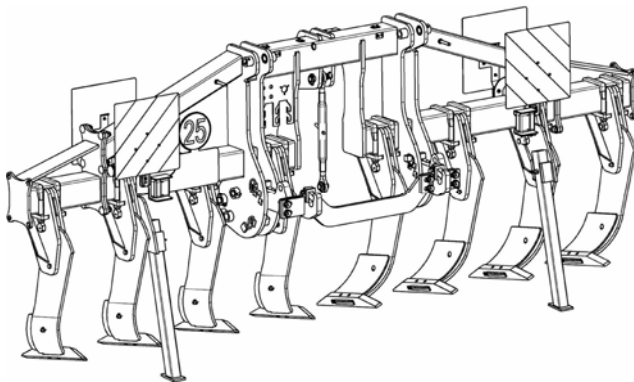
Raise machine to the maximum and make sure there are no interference with tractor. Final top link adjustments (length and position) will be made in the field.



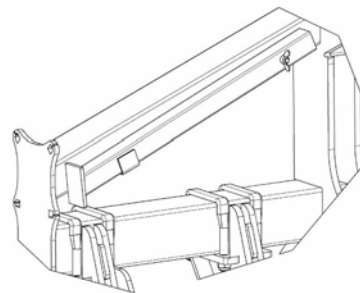
**IMPORTANT :** make sure to have enough clearance between machine yoke hitch and top link to avoid any contact from working to raised position.

### **5.1.5. Positioning parking stands**

Once machine is correctly hooked up, change stands from parking to working position.



Parking stand position



Working stand position

## 5.2. DETACHING THE MACHINE

Before detaching, make sure that ground is flat and firm enough to support the machine and its stands. Use safety blocks to support machine components if necessary.

Before lowering the machine to the ground, check stands general state and good positioning.



**DANGER** : do not let any part of your body underneath the machine or its stands when lowering it to the ground.  
Crushing may lead to death.

Proceed in the logical attaching opposite way :

- 1) Put stands in parking position,
- 2) Completely lower the machine to the ground,
- 3) Detach top link
- 4) Disconnect hydraulic lines (only for machine equipped with hydraulic rear hitch)
- 5) Detach lower lift links

Always operate with care.

## 6. HYDRAULIC CONNEXIONS

Follow recommendations given in the safety section of this manual. They are not restrictive.

**This section is dedicated to owners and / or users of machines equipped with optional hydraulic rear hitch.**

### 6.1. REQUIRED HYDRAULIC COUPLERS

- 1 DA remote for hydraulic rear hitch (option).

### 6.2. HYDRAULIC CONNECTIONS

- Always wipe hydraulic couplers with a clean rag on both tractor and machine sides before connecting circuits.
  - Always check for machine hydraulic connectors and tractor remotes compatibility. In case of incompatibility contact an authorized Grégoire-Besson dealer.
  - Logically connect hydraulic lines for the user :
- ⇒ Put most frequently used functions on closest lever
- ⇒ Watch for the way hydraulic flow is delivered : pull the lever to put machine in transport position (raise up / fold), push it to put machine in working position (lower / unfold).
- Check for hydraulic hoses length : too short they may break during sharp turns, too long they may interfere with tractor lift arms or tyres. In case of any problem, contact an authorized Grégoire-Besson dealer.

## 7. USING HELILOW COMBINED WITH A REAR EQUIPMENT

Follow recommendations given in the safety section of this manual. They are not restrictive.

### 7.1. REFLEXION BEFORE COMBINATION

Using Heliplow combined with rear equipment, owner (s) and operator (s) shall be considered as professionals responsible and capable of judgment for :

- benefit resulting from machine (= Heliplow) and rear equipment combination,
- compatibility between both machine and rear equipment,
- safety resulting from combination.

Never Grégoire-Besson or one of its representatives shall be responsible or liable for any problem resulting from final assembly.

Pay particular attention on the following points (non exhaustive list) :

- no contacts between machine and tractor from working to raised position,
- no interference on yoke hitches : there shall be enough clearance around hitch pins to avoid any contact between lift links and yoke hitches (for both linkages tractor / machine and machine / rear equipment),
- comply with tractor maximum authorized weight,
- comply with rear axle maximum authorized load (use front end weights if necessary), tractor hydraulic lift capacity, tractor tyres maximum load. Remember that ground or dust accumulations may increase weight after field operation.

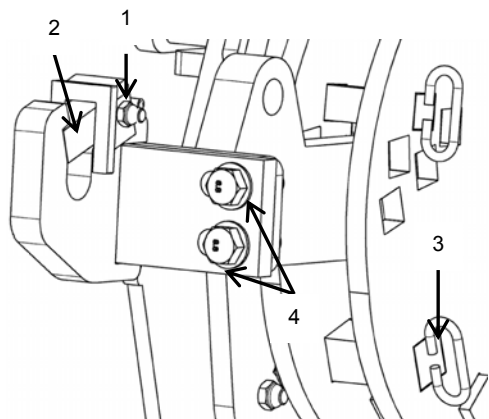


**ATTENTION** : any interference, wrong pressure repartition or over weighted load shall compromise mechanical resistance and cause wearing of parts and weldings.

Interference could have consequences later on and cause breakings manoeuvring in the field or after shocks transporting on the road. These breakings may damage the machine and / or the rear equipment and cause severe injury or death.

## 7.2. HITCHING REAR EQUIPMENT

Follow instructions given in rear equipment operator's manual.



Machine rear hitch is equipped with hooks cat. II (cat. III available in option).

- On both hooks, remove bolt 1, take stopper 2 out to open hook. Check for good compatibility between machine rear hitch and rear equipment hitch and pins.
- Slowly back up tractor, do not lower machine too much so that tines do not touch the ground.
- Getting close from rear equipment :
  - ⇒ make sure hooks are low enough to attach. If not, they have to be further lowered : remove square pins 3 or unscrew cylinders adjustable yokes. Attention : yokes shall stay screwed enough to avoid any unforeseen pull-out that could provoke accident,
  - ⇒ make sure Heliplow hooks spacing corresponds to rear equipment hitch width. If not, loose all bolts 4 (only two are visible on picture) and move hooks. Change R.H. and L.H hooks to turn rear hitch from cat. II to cat. III. Make sure both hooks are centred regarding machine traction line so that rear equipment pressure is evenly distributed on machine and on tractor.
- Slowly back up tractor till machines hooks are lined up underneath rear equipment hitch pins.
- Raise up tractor hydraulic lift till machine hooks hold rear equipment hitch pins.
- Verify that there is enough clearance between Heliplow rear hitch hooks and rear equipment yoke hitch to avoid any interference.
- Put back stoppers 2 and bolts 1.
- Attach top link, the same way you would do it hitching to the tractor).
- Make sure there are no contacts between Heliplow and rear equipment.

# NOTES

## 8. DRIVING ON PUBLIC ROAD

Follow recommendations given in the safety section of this manual. They are not restrictive.

Before driving on a public road :

- **Be sure all signs, reflectors and lights required by local current law are in place, clean and visible to traffic.**
- Make sure there are no interferences between tractor and machine.
- Adopt a gentle attitude towards other public road users.
- Verify tyres general state and pressure. Comply with maximum load capacity. Follow manufacturer's recommendations.

On public road, comply with local applicable laws :

- Tractor required for road transport shall equal the size and the horse power rating of the tractor used to work in the field.
- Do not drive over 25 km/h (= 15 mph).
- Drive at a reasonable speed to maintain complete control of both tractor and machine.
- Reduce speed on corners and on rough grounds.
- Do not drive down a hill faster than it could be possible to drive it up.
- Do not apply the tractor brakes to attempt a sharp turn.
- Always check wheel studs tightness before driving on a public road. They may get loose because of vibrations.
- Respect authorized maximum size for transport load (width, weight, length). For over sized loads, comply with current law taking all necessary precautions (signs, lights, escort, authorizations, ... ).
- Respect the maximum wheel axle load and the maximum total driving load. Make sure front axle carries at least 20% of tractor's tare. Use front end weights if necessary.

**ATTENTION : driving on public roads, operator is responsible for both tractor and equipment. He has to comply with current applicable law** (getting in conformity with it and following its evolutions).

## 9. FIELD ADJUSTMENT

Follow recommendations given in the safety section of this manual. They are not restrictive.

### 9.1. FIELD USING

To reach the best result, use machine at a reasonable speed, with a slight angle towards previous crop seeding line (15° to 30°). This will allow :

- To avoid excessive track compaction,
- To improve trash flow and repartition,
- To leave an aerated and levelled ground surface.

Always lift up machine before manoeuvring or turning on headlands.

Never attempt a sharp turn with the machine in the ground.

Reduce speed before manoeuvring or crossing obstacles (ditch, ridge, rocky spots, ...).

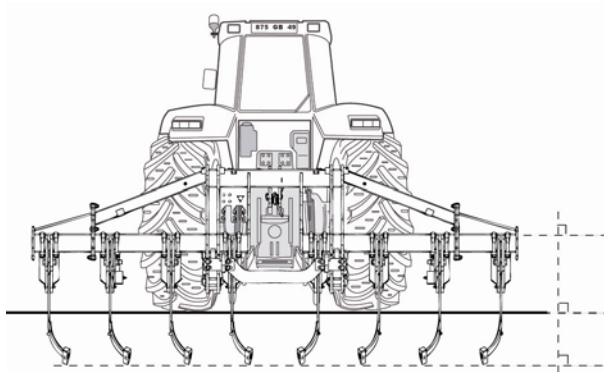
### 9.2. ADJUSTING THE MACHINE

#### 9.2.1. Working depth

**Working depth is controlled by tractor hydraulic lift.**

To have a constant working depth, set tractor hydraulic lift on control of position or on minimum draft control (10% to 20% max).

#### 9.2.2. Side to side levelling

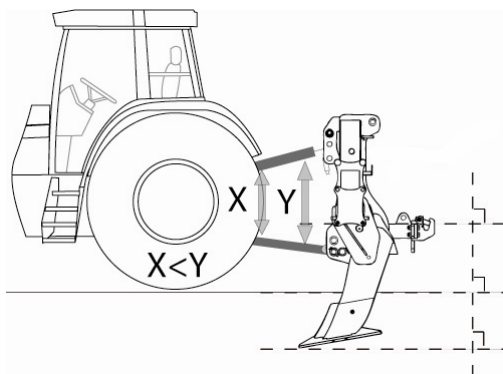


In working conditions, machine shall run level side to side (= from left to right), main frame strictly parallel to the ground.

**It happens most of the time when tractor's preparation has been correctly done** (same tyre pressure on both sides, tractor hitch levelled, stabilization system positioned ...).

Note : when machine works at desired depth, take a few meters back to check its good levelling.

#### 9.2.3. Front to rear levelling



In working conditions, machine shall run level front to rear. **Set tractor top link length to reach this position.**



Never extend top link too much to avoid any untimely pull-out.

Note : when machine works at desired depth, take a few meters back to check its good levelling.

### **9.2.4. Weight transfer**

**Top link shall always be positioned higher on machine side than on tractor side.** This will allow a good weight transfer on front axle. Refer to picture,  $X < Y$ .

Choose appropriate hole on machine yoke hitch or move top link attaching position on tractor.

## **9.3. MACHINE EQUIPPED WITH GAUGE WHEELS (OPTION)**

Optional lateral gauge wheels improve machine stability in the field and control working depth.

Adjustment is done setting turnbuckle length (one on each wheel). To have an **even working depth, both wheels** have to be **adjusted at the same height = turnbuckles** fixed in the **same holes** with the **same length**.

### Working depth adjustment for machine equipped with lateral gauge wheels



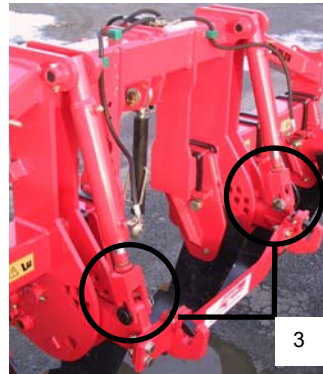
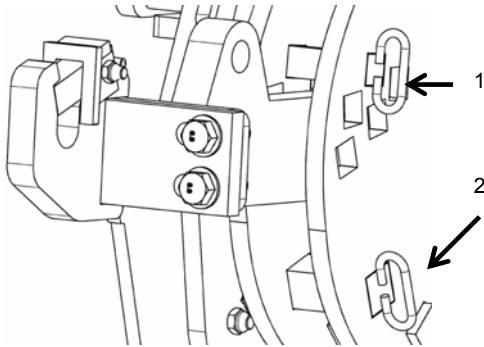
- Set machine working depth as described here above with gauge wheels in upper position so that they do not touch the ground and do not interfere with adjustments.
- Once machine is correctly set up, (= runs level front to rear and side to side at desired depth), stop tractor, raise machine a few centimetres, shut off engine and set parking brakes.
- Extend lateral gauge wheels turnbuckles to lower them on the ground. **Make sure both L.H. and R.H. turnbuckles have the same length and the same position.**
- Start working again. Lower the machine to the ground and after a few meters, make sure machine is still level front to rear and side to side.

**IMPORTANT** : once machine is correctly set up, put tractor hydraulic lift on “**Float position**”. Gauge wheels control working depth and machine stability. Tractor hydraulic lift shall apply excessive pressure that could damage them.

## 9.4. COMBINED USING

Using machine (= Heliplow) combined with a rear equipment, weight shall be balanced between tractor (50 %) and rear equipment (50 %).

### **9.4.1. Rear equipment working depth**



Rear equipment working depth is set positioning square pins 1 and 2 on rear hitch yokes (refer to L.H. picture).

Square pin 1 controls working depth.

Square pin 2 controls rear equipment stroke limit i.e. transport height and raising stroke.

For machines equipped with hydraulic rear hitch, working depth is set from tractor's cab, acting on hydraulic control lever.

### **9.4.2. Rear equipment working depth**

#### Side to side levelling

For rear equipment to work level side to side, machine has to run level with both hooks set the same.

For machine equipped with hydraulic rear hitch, check that both lift cylinders have the same axle to axle length with rods fully extended or fully retracted. If not, change screw type yoke 3 adjustment (refer to R.H. picture).

#### Front to rear levelling

For rear equipment to work level front to rear, machine top link length has to be set correctly.

**Note** : in this configuration, any tractor top link length change may result in machine top link length re-adjustment.

## 10. ADDING OR REMOVING LATERAL EXTENSIONS

Follow recommendations given in the safety section of this manual. They are not restrictive.

Lateral extensions have to be added or removed by pair : left hand side and right hand side.



Adding or removing lateral extensions requires specific equipments to support the machine and a chain lock to lift up parts.

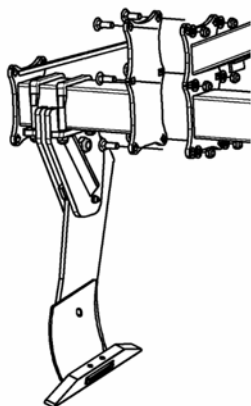
Operator shall wear appropriate equipments such as helmet, protection glasses, heavy leather gloves, safety shoes ...



Machine shall be correctly hooked up to tractor to do this job.

**Do not hesitate to contact an authorized Grégoire-Besson dealer to do this job.**

### Adding lateral extension procedure :



1. Park tractor and machine on a flat and firm surface.
2. Lower the machine, but leave a 15 cm clearance between ground and points.
3. Shut off tractor engine, set parking brakes and remove ignition key.
4. Approach lateral extension with a chain lock. Tight the 6 carriage bolts (4 to fix lateral gauge wheels).
5. Detach chain lock.

Check all bolts tightness after the first hours of use.

To remove lateral extensions, follow here above procedure the opposite way.



**IMPORTANT :** after removing lateral extensions take particular care on their storage. Crushing may lead to death.

Parts working in the ground may be sharpened and cause severe injury.

**In case of any trouble, contact an authorized Grégoire-Besson dealer.**

## 11. MAINTENANCE

Follow recommendations given in the safety section of this manual. They are not restrictive.

### 11.1. GENERAL INSTRUCTIONS



**Operator and user are responsible for good machine maintenance.**



Inspect machine before and after each use. Repairs and service have to be done immediately so that they are not forgotten. Always leave the machine in a good state.

Cleaning the machine facilitates inspection. Check general state of machine, weldings, wheels studs, tyres, ...

Be careful with hydraulic lines : frictions may lead to excessive wearing and lines may leak. Never search a leak with your hands. Immediately replace any defective component. Spare components shall have the same characteristics.

Parts working in the ground may be sharpened and cause severe injury. Take particular care and use heavy leather gloves to remove them.

Never attempt any intervention on the machine while tractor engine is running.

Always properly secure all components before starting any maintenance operation underneath the machine.

Before using the machine for the first time, check all bolts tightness. Verify after 50 working hours and then at the beginning of each season. Pay special daily attention on :

- wheel studs tightness
- wearing parts bolts and nuts tightness in rocky or dry conditions (lots of vibrations).

### 11.2. LUBRICATION

A good lubrication of all moving parts will both allow the machine to work fine and insure its long-lasting.

Grease fittings are installed on all pivot points. Grease both lubricates moving parts and chases away any abrasive dust that could come into pivot points.

Use quality grease, type Unil – Opal MS02 or equivalent.

Always wipe grease fittings with a clean rag before introducing grease. Do not hesitate to change any worn or broken grease fitting. Check for good grease course.

Remove all grease accumulation around grease fittings or moving parts.

Grease frequency recommendations are based on a regular use of the machine. Harder conditions would require more.

**The best is to grease regularly with regular quantity. Do not over grease.**

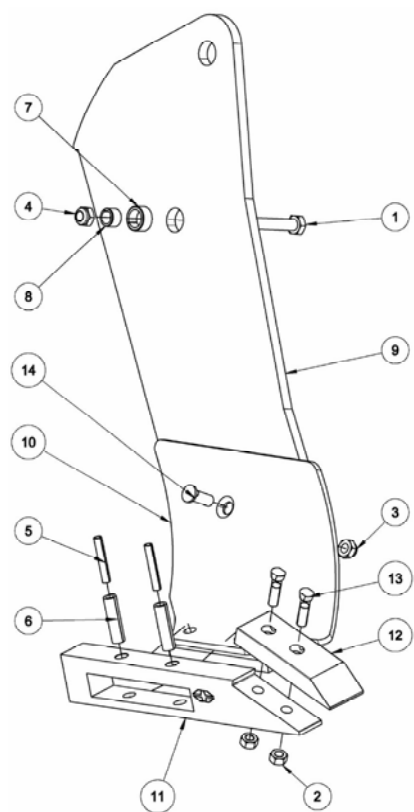
## 11.3. SPARE PARTS

Genuine Grégoire-Besson parts have been specially designed and developed. Only the use of these parts will ensure proper fit, longevity and field quality work of your machine.



Using any other spare part than certified from Grégoire-Besson will void warranty.

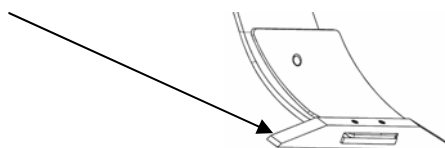
Changing wearing parts too late may be cause of poor quality work (penetration troubles, ...) and may damage structure parts.



1. Shearing bolt H M14x80 - 8.8 Z	M211416
2. Std nut H M12 thread 1.75	M241012
3. Nyloc nut std H M14 thread 1.50	M242014
4. Nyloc nut std H M14 thread 1.50	M242014
5. Roll pin 10 x 60 mm	M252012
6. Roll pin 16 x 60 mm	M252030
7. Shearing bushing Ø 16 mm	M260065
8. Shearing bushing Ø 22.5 mm	M260066
9. Heliplow tine twisted	R.H. M302048
	L.H. M302049
10. Heliplow counter blade	R.H. M310064
	L.H. M310065
11. Heliplow point support only	M320117
12. Heliplow bolted point standard	M320118
13. Conical head screw M12 x 59	SP13559
14. T F screw M 14 x 40 - 8.8	WM211408

Reversible share

M320113



## 11.4. STORAGE SAFETY

- Before detaching the machine for storage, make sure ground is clean, flat and firm enough.
- Use parking stand and all other locking devices to prevent from any unforeseen movement during detachment or later on.
- Always store machine in working position (= unfolded).
- Block machine wheels to avoid any unforeseen movement.
- During storage, wheels shall not carry any weight.
- NEVER detach machine in raised position.
- Remove pressure from hydraulic circuit (engine shut off, shake hydraulic control lever in the cab).
- Store machine away from human activity.
- Store machine in a dry and dust free area (shed). Protect ram rods that cannot be retracted from rust using grease or oil.

**CAUTION** : never let children play around farm equipment.

## ANNEX 1 – WEIGHT DISTRIBUTION

### 1. RESPECT WEIGHT DISTRIBUTION

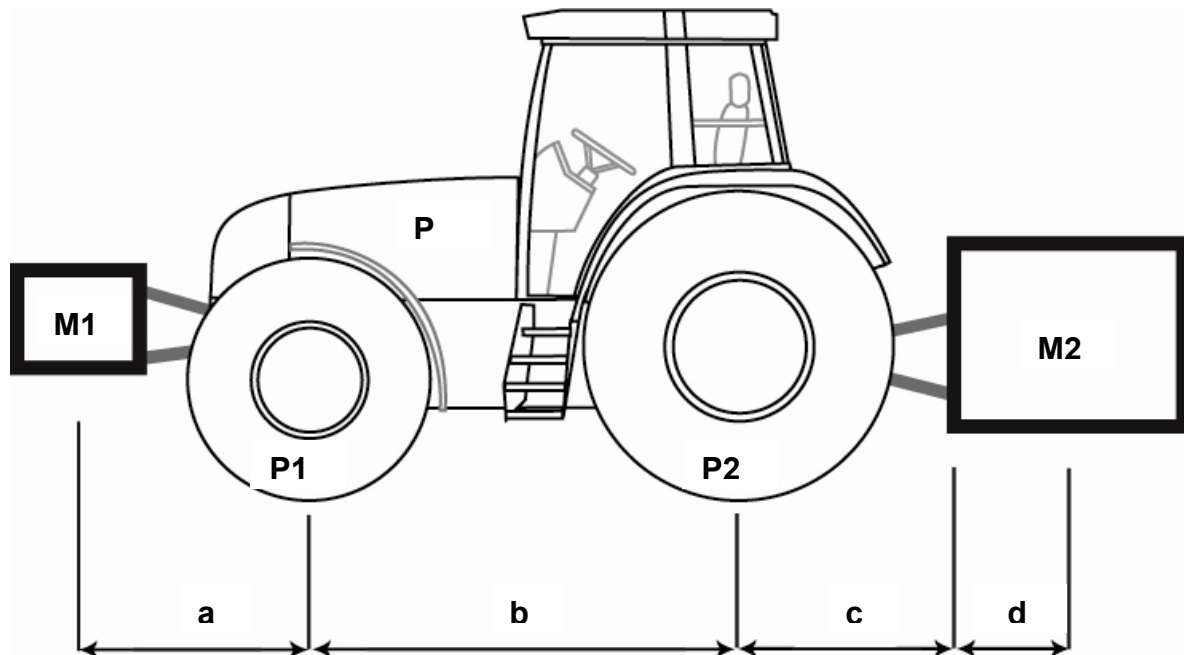
Before hitching fully mounted equipments a tractor (front hitch and / or rear hitch), check the following points :

- do not exceed tractor maximum authorized weight,
- do not exceed maximum authorized weight on hitching points
- do not exceed maximum authorized weight on wheel axles
- do not exceed maximum authorized weight on tyres
- weight on front axle shall be at least 20 of unladen weight of the tractor

### 2. REQUIRED DATAS

Indicator	Data	How to find it ?
PV	Tractor unladen weight (kg)	Instructions manual or registration documents
	Tractor maximum authorized weight (kg)	Instructions manual or registration documents
	Maximum authorized weight on tractor front axle (kg)	Instructions manual or registration documents
P1	Tractor unladen weight on front axle (kg)	Instructions manual or registration documents
P1 <sub>cal</sub>	Tractor real weight on front axle (kg)	Calculation
	Maximum authorized weight on tractor rear axle (kg)	Instructions manual or registration documents
P2	Tractor unladen weight on rear axle (kg)	Instructions manual or registration documents
P2 <sub>cal</sub>	Tractor real weight on rear axle (kg)	Calculation
M1	Total front end weight or front implement weight (kg)	Front end specifications or front implement instructions manual
M2	Total rear implement weight (kg)	Implement instructions manual
a	Distance between front end weight (or implement) centre of gravity and the middle of front axle (m)	Instructions manuals or measurement
b	Distance between the middle of front and rear axles (m)	Instructions manual or registration documents
c	Distance between the middle of rear axle and rear hitching points (m)	Instructions manual or measurement
d	Distance between rear hitching points and rear implement centre of gravity (m)	Implement instructions manual

### 3. CALCULATIONS



#### **3.1. Minimum front end weighting calculation**

$$M1_{\text{mini}} = \frac{M2 \times (c+d) - P1 \times b + 0.2 \times P \times b}{a + b}$$

#### **3.2. Minimum rear end weighting calculation**

$$M2_{\text{mini}} = \frac{M1 \times a - P2 \times b + 0.45 \times P \times b}{b + c + d}$$

#### **3.3. Real over all weight calculation**

$$PT_{\text{real}} = PV + M1 + M2$$

#### **3.4. Real front axle weight calculation**

$$P1_{\text{cal}} = \frac{M1 \times (a+b) + P1 \times b - M2 \times (c+d)}{b}$$

#### **3.5. Real rear axle weight calculation**

$$P2_{\text{cal}} = PT_{\text{real}} - P1_{\text{cal}}$$

# NOTES

## 12. QUICKLY STARTING HELIPLOW

**Be careful. Take all precautionary measures.  
Respect safety recommendations.**

### PREPARING THE TRACTOR

- 1. Check tyre pressure**  
It should be the same on both sides on each axle. Make sure all wheel studs are tight.  
Always follow tyre manufacturer recommendations.
- 2. Adjust tractor hitch levelling**  
Set lift links length for tractor hitch to be perfectly level with the ground.  
Use a strict bar to verify lift links length alignment with the ground and / or rear axle.
- 3. Adjust lift links lateral sway**  
Set stabilizers to let a minimum lateral sway (2 to 4 cm).
- 4. Check top link**  
Connexion between top link and machine must be done through a tie rod and not through an automatic hook.

### HITCHING

- 5. Attach lower links**  
Choose the appropriated hole between the three according to conditions (lift links dimension and position, wheels diameter, ... ).
- 6. Attach top link**
- 7. Put parking stands in working position**
- 8. Make sure there are no interferences between machine and tractor from raised position to working position**  
Machine shall never come in contact with tractor.  
There should be no contact between tractor lift links and machine yoke hitch.
- 9. Using combined rear equipment**  
Attach rear equipment the same way you would hitch it to a tractor.  
Follow rear equipment operator's manual recommendations.  
Comply with tractor's and tyres' maximum load capacities.

### FIELD AJUSTMENT

- 10. In working conditions, at desired depth, frame shall run level**  
Side to side levelling.  
Front to rear levelling.
- 11. Verify that there are no frictions in machine yokes hitch**  
Pay particular attention on top link : there shall be no contacts from working to raised position.
- 12. Using combined rear equipment : adjust Heliplow rear hitch stoppers**  
Upper square pin = depth control  
Lower square pin = rear equipment stoke limit (when raising the machine / during road transport).  
Follow rear equipment operator's manual instructions.

### MAINTENANCE

- 13. Follow recommendations given in this manual according to lubrication and maintenance of the machine**

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